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Publisher's Foreword

This book is in the Houghton Mifflin Software Solutions Series. The series is explicitly designed to offer solutions to the problems encountered by educators who wish to include instruction on popular commercial application software programs as a component of courses they teach.

The purpose of this series is to provide high quality, inexpensive—in fact, remarkably inexpensive—tutorial manuals keyed to the leading software packages available.

Instructionally Innovative

Each manual in the Software Solutions Series focuses on those features of a particular program that will actually be used by most individuals. The manuals do not purport to teach everything there is to know about the product; to do that, the manual would have to be needlessly complex and would impose unrealistic time constraints on both students and instructors. The manuals will enable students to attain comfortable proficiency in the use of software products.

Flexible

The Software Solutions Series permits instructors to choose the manuals that best suit their needs. This offers an important advantage over those manuals that combine coverage of several programs in a single publication and thus limit flexibility.

Cost

Students enrolled in a computer literacy or business data processing course often require lab-based instruction on the use of three or more application programs, usually a word processing program, a database manager, and a spreadsheet program. This common course configuration can impose a financial burden on students if they must purchase three expensive manuals in addition to the primary course text. We believe the Software Solutions Series goes a long way toward solving this problem by providing an effective and inexpensive method for learning about software.

High Quality

All manuals in the Software Solutions Series are authored by writers who have teaching experience in the classroom and in training programs in business and industry. Each manual in the series has been reviewed for accuracy and pedagogical effectiveness.

Software Disks

The Software Solutions Series currently consists of fourteen manuals and the following software products.

Master disks containing educational versions of V-P Planner Plus, Microsoft Works, WordPerfect 4.2, WordStar, dBASE III Plus, and SuperCalc 4 are available from Houghton Mifflin without charge to adopters of the manuals. These disks may be duplicated for individual student use by instructors in accordance with applicable license agreements.

For Lotus 1-2-3, WordPerfect 5.0, Microsoft Word, MS-DOS, dBASE IV, Lotus 1-2-3 Release 2.2, BASIC and PageMaker, data disks rather than educational versions of the program disks are available from Houghton Mifflin without charge to adopters.

All manuals in the Software Solutions Series are for use with IBM equipment except for PageMaker, which is only for the Macintosh.

We wish to thank Microsoft Corporation, WordPerfect Corporation, MicroPro International, Computer Associates, Ashton-Tate and Paperback Software for their cooperation in helping to make this series available.

Preface

Using MS-DOS assumes no prior experience with computers or software. It can serve to introduce students to microcomputers or to enable those already proficient at certain software applications (word processing, spreadsheets, and so on) to learn more about MS-DOS.

By teaching students how to use DOS (disk operating system), this manual gives students a tool to help them become more efficient at running their computers and working with their computer files. *Using MS-DOS* encourages the natural learning process so that students avoid frustration and confusion. The sharp focus of the manual's logical design enables students to master DOS commands in small, easy steps, develop an understanding of how DOS works, and issue commands confidently to achieve useful results—all within a reasonable period of time.

Integral parts of each chapter that ensure mastery of the basics in a short period of time are emphasized here.

- An introduction explains features covered in the chapter.
- New terminology is presented at the beginning of each chapter.
- Step-by-step instructions allow students to use each feature in a hands-on environment.
- Every exercise step is enclosed in a box, making it easy for students to identify what they are to read and what they are to do.
- Ample illustrations enable students to easily check their work as they go along, building their confidence and understanding and providing positive reinforcement.
- Tips give students important shortcuts and reminders as well as directions and explanations.

- Special notes explain how to use particular DOS commands
- Cautions and warnings alert students to possible consequences if they enter an incorrect command.
- Each chapter ends with a summary of the concepts and commands presented, encouraging review and mastery of the basics.
- Three appendixes make it easy for students to look up the information they need to use DOS: Appendix A is a summary of DOS commands, Appendix B includes common DOS error messages, and Appendix C has application exercises for Chapters 4 through 7.

The step-by-step instructions complement the classroom-tested read-and-do approach to teaching. After reading a simple explanation of a new concept and studying an example, students complete an exercise on the computer. This logical presentation means that students focus on one concept at a time, are guided through an exercise in which they practice using the concept under discussion, and complete the exercise on their own—gaining confidence as they complete the performance of each new concept. Clear hands-on instructions walk students through each new DOS concept and commands of the software, and illustrations showing correct screens or printed output let students check their work as they go along providing immediate feedback.

Because *Using MS-DOS* is designed to give people new to the computer basic competence in using the software, it does not cover advanced DOS features that the majority of students are unlikely to use. Seven text chapters thoroughly cover the commands needed to boot the computer system, manage the devices such as the printer, screen, and keyboard, and manage files such as copying and deleting files. Students who wish to do so may experiment with other DOS features included on the system disk but not discussed in this manual. How much extra students may actually complete may be limited by directions from the instructor or the computer.

The authors have developed the *Data diskette* to introduce new users to DOS's capabilities and to provide them with an opportunity for actual hands-on experience. Master diskettes containing data, which may be copied, are supplied to instructors who adopt this manual.

To use this manual, students must have the following:

- A copy of PC-DOS (or MS-DOS) Version 2.0 or higher
- A data diskette with files that provide exercises that accompany this text
- An IBM PC or 100 percent compatible computer that has two disk drives, one of which may be a hard (fixed) disk drive system

- At least 128K RAM
- A standard monitor
- A printer
- A blank double-sided diskette

Acknowledgments

In writing textbooks, authors need the help of a number of individuals who make the project a success.

Thank you Mary Jane Tobaben, Brookhaven College, for reading the manuscript and testing the activities.

Thank you Kaye Davis, Brookhaven College, for your attention to detail in working through the chapters and commenting on the manuscript.

1

Computer System Basics

Welcome to DOS. To become more efficient in using DOS, spend a few minutes getting acquainted with your personal computer. Refer to your DOS manual and any other training materials you may have for specific instructions about your computer's operations.

Do not be intimidated by the computer. It is simply a sophisticated tool that saves time and improves your efficiency and productivity in handling information. Before you begin, however, you should know that learning to use DOS on your computer involves paying attention to detail as well as practicing.

This chapter acquaints you with the basic terminology and the components of your computer system.

Terminology

Knowing the following basic terms will help you understand your computer and its operation:

Hardware means the physical parts of the computer, such as the **keyboard, monitor, central processing unit,** and **printer.**

Software means the programs that run on the computer. Programs are sets of instructions for the hardware. Certain software programs tell the hardware what to do, when to do it, and how to do it (in this application, DOS). Other types of software allow typing tasks, such as word processing, or other tasks, such as accounting or graphics, to be performed.

The principal software for using a personal computer is disk operating system **(DOS).** DOS is the software that tells the computer how to interact with the keyboard, monitor, other hardware, and the user.

The **prompt** is shown on the screen as > preceded by the letter of the disk drive being used at the moment. The prompt alerts the user that the computer has been activated and is waiting for further instructions.

Commands are combinations of keystrokes used to instruct the computer to perform certain functions, such as printing, renaming a document, or copying a document.

You will begin to understand these basic terms more and will be introduced to additional terms as you work through this chapter.

Basic Components of the Computer System

A computer is classified as a system because it consists of a number of components that work together to make up the complete system. Computer systems are subdivided into *hardware* and *software*.

Input	Processing	Output	Storage
Keyboard	Microprocessor	Monitors	Floppy disks
Mouse	Memory	Printers	Hard disks
			Tape drives

Figure 1-1 Four basic functions.

This chapter discusses the typical hardware components as they relate to the four basic functions shown in Figure 1-1. **Input** includes a keyboard and may include other hand-held devices, such as a mouse. **Processing** includes the main system unit—the microprocessor or the brains of the computer and memory. **Output** includes devices such as monitors and printers. **Storage** includes floppy diskettes and hard disks and may include cassette tapes.

All the components work together as a complete system. You should become familiar with the functions and capabilities of these components, which are shown in Figure 1-2.

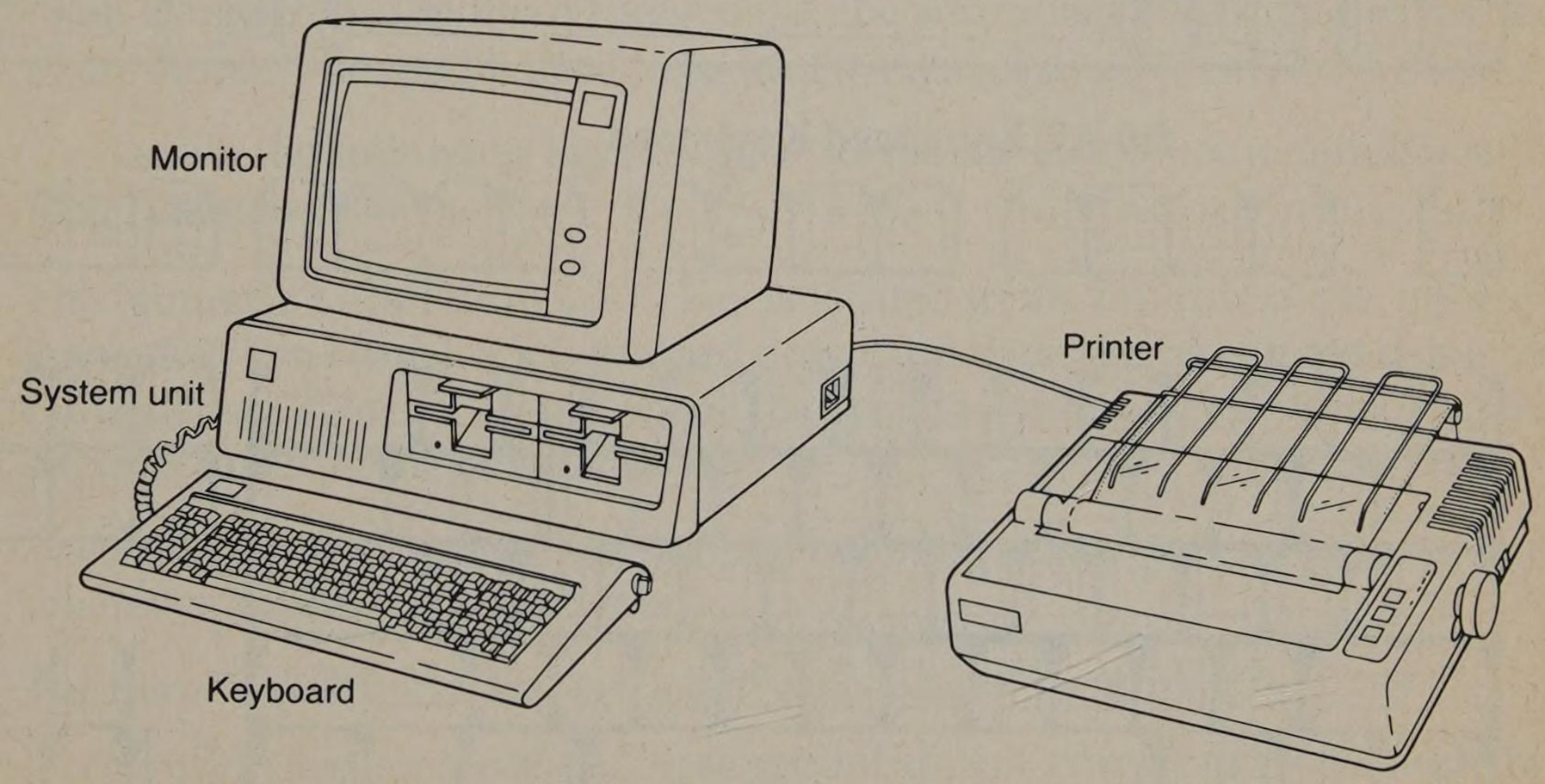


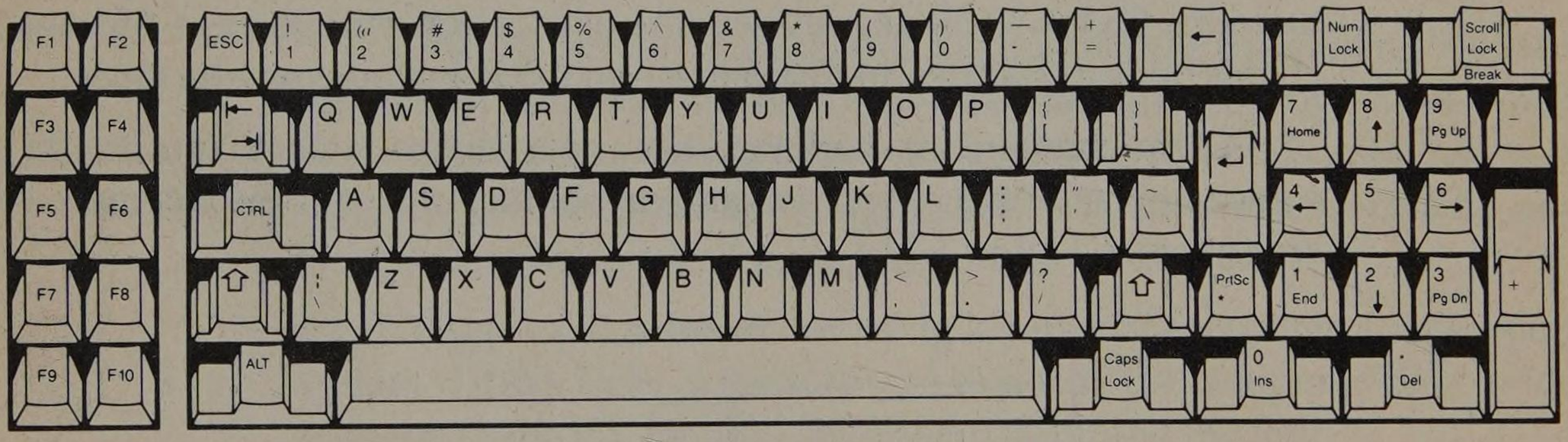
Figure 1-2 Basic components of the IBM PC.

Keyboard

The computer keyboard looks similar to the keyboard of a typewriter, except that it has additional keys. The keyboard lets you interact with the computer. The two basic types of keyboards common with personal computers are: (a) PC/XT and (b) AT Enhanced keyboards (IBM System/2 keyboards are similar to the AT). Figure 1-3 shows both types.

You can see from Figure 1-3 that the central portion of the keyboard has the standard display of letters and numbers (referred to as QWERTY). To the far left (XT) or top of the enhanced keyboard are ten special function (F) keys labeled F1 through F10 or F12. The F keys let you perform particular commands, thus eliminating the need to press several keys to execute these commands. The purpose of each F key changes from software to software. The F keys in DOS are used to change or edit commands (these keys are listed in Appendix A).

(a) PC/XT keyboard



(b) AT Enhanced Keyboard

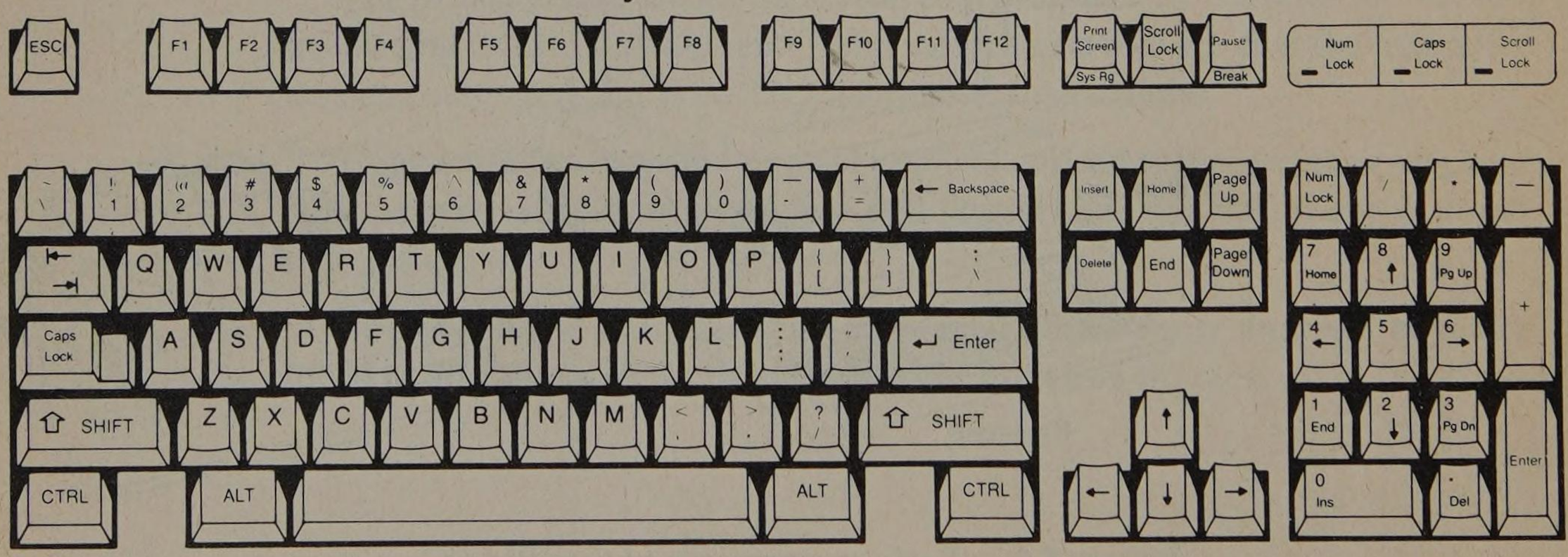


Figure 1-3 Basic personal computer keyboards.

Complete the following steps with a computer keyboard in front of you:

1. Determine the type of keyboard you have attached to your computer.

   Keyboard _____

2. Take a few moments to locate these additional keys:

The **Escape** (Esc) key is used to cancel certain operations. The **Control** (Ctrl) and **Alternate** (Alt) keys are used in combination with other keys to give the computer particular instructions. The **Left** and **Right Shift** keys, labeled with an arrow (⇑), are held down to capitalize letters or to obtain special characters or symbols.

The **Backspace** key, labeled with an arrow (←), moves the cursor back one space at a time and erases any character it goes over.

The **Enter** key, labeled with a down arrow (↵), is used to complete an instruction given to the computer. The Enter key is also referred to as the Return key.

The **Caps Lock** key is pressed to capitalize letters without using the shift keys and to type numbers. For example, when Caps Lock is on, you can type A1B2C3D4 without the specialized characters above 1, 2, 3, and 4 (!, @, #, $) appearing. Press the Caps Lock key once to turn the function on, and then press it again to turn it off.

To the far right is a numeric keypad that can be used for quickly keyboarding numbers or for moving the cursor around the screen. Although DOS does not fully use the cursor movement keys, other software programs will use them extensively. On the AT keyboard, the additional cursor pad to the left of the numeric keypad is used to control the cursor movements on the screen.

Locate the following keys on your keyboard and become familiar with their functions:

1. The **Numeric Lock** (Num Lock) key is located in the top row of the numeric keypad. When Num Lock is pressed down, numbers can be entered using the numeric pad rather than the arrow (cursor movement) keys. When pressed again, it turns off the Num Lock key.

2. The **Print Screen** key (labeled PrtSc/* on the XT) is used to send to the printer whatever appears on the screen.

3. The **Scroll Lock Break** key is used to cancel certain commands.

You will learn more about these special keys as you progress through this text.

Monitor

The monitor, also called the screen or video display, looks like a television screen—as you can see from Figure 1-2. The **monitor** displays both the data that you keyboard and instructions for you to follow. Just as there are different types of keyboards, there are different kinds of monitors. Monitors are either monochrome (black/white, phosphorous, amber) or color. There are at least two knobs on a monitor: One knob adjusts the screen contrast, and the other knob controls the screen brightness for eye comfort.

Complete the following step concerning your monitor:

1 Determine the type of monitor you are using.

Monitor type _____

System Unit

The system unit houses the central processing unit (CPU), the "brain" of the computer. The brain does all the analytical, computational, and logical computer operations. The system unit contains the memory unit, one or more disk drives, the power supply, and other important hardware. See Figure 1-4.

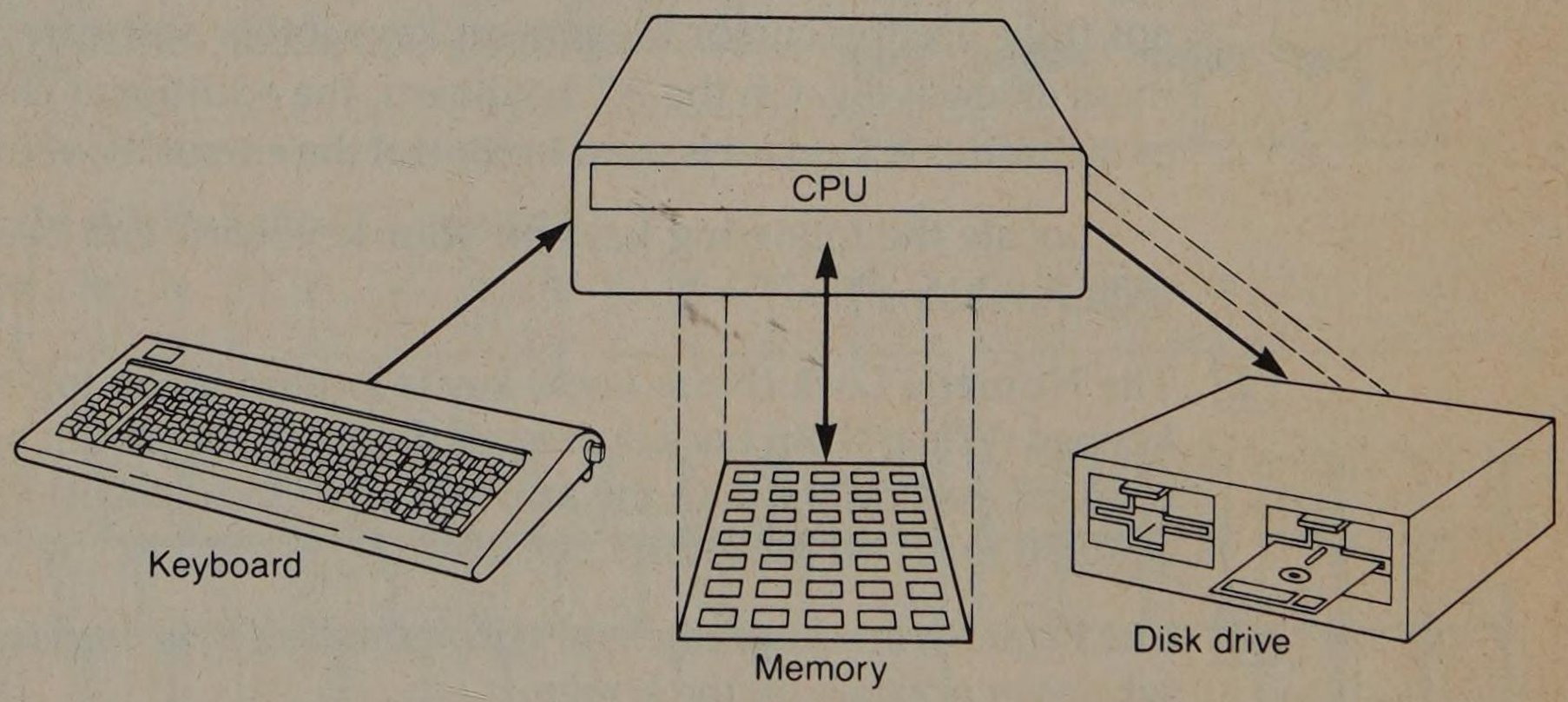


Figure 1-4 System unit.

Memory

As its name implies, **memory** stores data or other information temporarily in your computer until you decide to save (write) it on a disk. The information that is stored is processed first by the CPU.

Memory in your computer, its processing power and storage capacity, is usually expressed in bits and bytes. A **byte** is the smallest unit of storage and consists of eight bits in a byte. A byte is one character, that is, one alphanumeric character, symbol, or space. Computer memory is usually represented by thousands of bytes. **Kilobytes** (K) means 1,024 bytes of storage. For example, a computer with 256K of memory is referred to as containing slightly more than 256,000 bytes, although it actually contains exactly 262,144 (1,024 × 256) bytes.

1 Find out how much memory your computer holds.

Memory capacity _____

There are two basic types of memory: read-only memory **(ROM)** and random-access memory **(RAM).** ROM is the memory that holds the instructions built into the computer's circuitry when the memory is manufactured. The CPU can read and execute the instructions but cannot change them. This type of memory is used to hold permanent programs and information the computer needs. For example, ROM holds the instructions to tell the computer what to do after the computer is turned on.

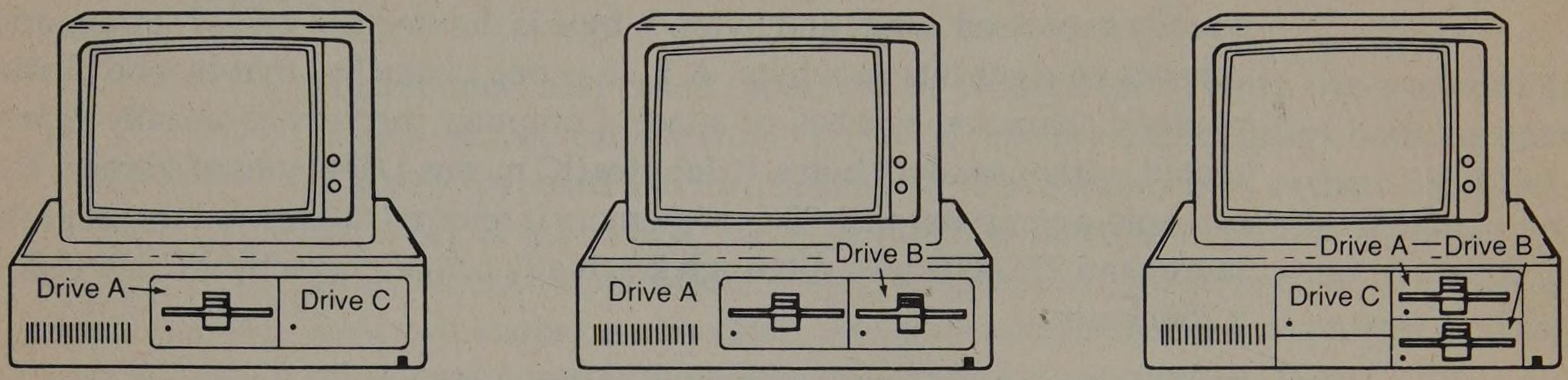
RAM is the memory accessible to you. You can put information into RAM memory, change information already stored, or erase stored information. RAM memory holds data and program instructions that control the operation of the computer. The total amount of RAM available determines which software can be run and how much data can be processed.

Most RAM consists of volatile memory, which means that this memory does not hold data after you turn off the computer. On the other hand, ROM is nonvolatile; when you turn off the computer, the contents of ROM are not changed or lost.

Disk Drives

A **disk drive** is a device that is attached to the computer. Disk drives read (play) information from and write it back to diskettes or disk. There are two basic types of disk drives: floppy or hard (fixed). These drives are housed in the system unit and may be configured (installed) in the following ways (also see Figure 1-5):

1. One hard (fixed) disk drive with one floppy disk drive
2. Two floppy disk drives
3. One hard disk drive with two floppy disk drives



One hard (fixed) drive with one floppy drive

Two floppy disk drives

One hard drive with two floppy drives

Figure 1-5 Configurations of disk drives.

Use the following step to determine your type of disk drive:

1 Determine the type of disk drive installation in your computer system. Check one of the following:

a. One hard disk drive with one floppy disk drive _____

b. Two floppy disk drives _____

c. One hard disk drive with two floppy disk drives _____

Disk Drive Names

Floppy Disk Drive

Two **floppy disk drives** are usually referred to as drives A and B, although no labels appear on the drives. In Figure 1-6, the left drive is A; the right drive is B.

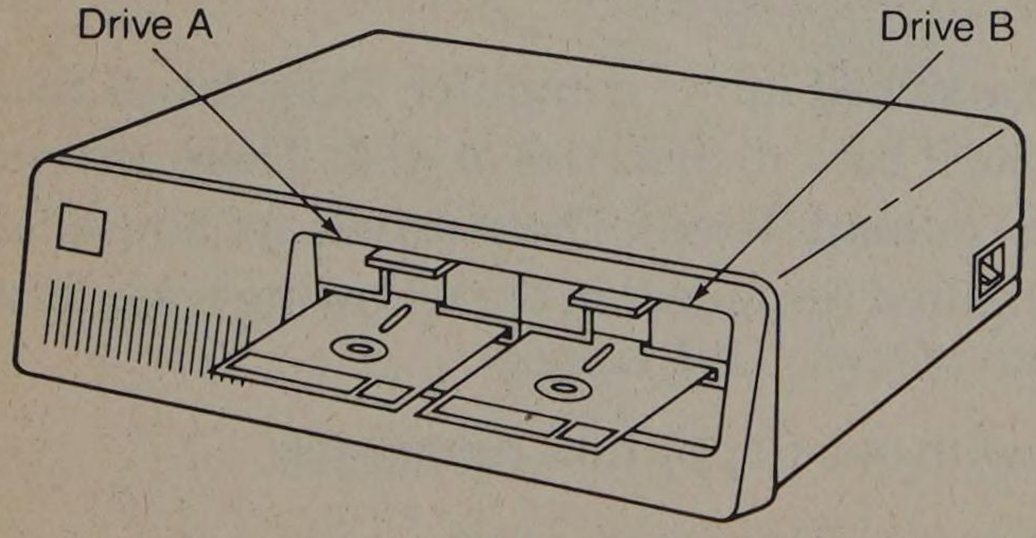


Figure 1-6 Full height disk drives.

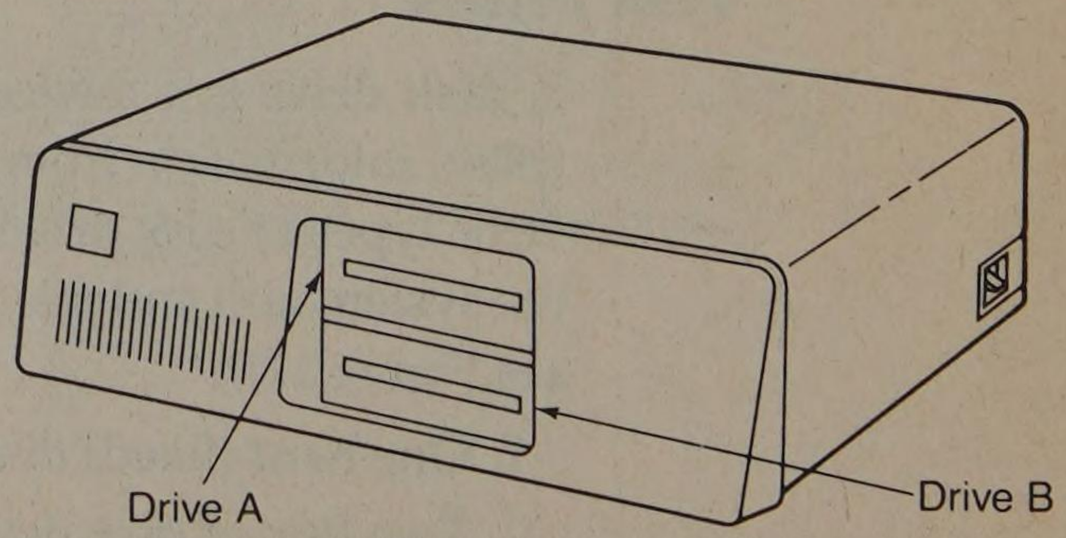


Figure 1-7 Half-height disk drives.

Full-height disk drives are arranged side by side: A on the left and B on the right, as shown in Figure 1-6. Figure 1-7 shows **half-height** disk drives, stacked with A on top of B.

Hard (Fixed) Disk Drive

If you have a **hard** (sometimes called **fixed**) **disk** drive, it is usually referred to as drive C; the one-floppy disk drive is known as drive A—regardless of whether there is only one or two floppy disk drives.

This type of disk drive is named appropriately because the disk is permanently installed in the system unit and is made of rigid disks or platters stacked one above another. These platters are covered with a magnetic material. A hard disk drive can hold substantially more information than a floppy diskette drive and can rotate its disk much faster because of its assembly.

Logged Disk Drive

The disk drive in use is known as the **logged disk drive**. For example, if the computer is reading data from drive A, then drive A is the logged disk drive. If you are using a floppy disk drive, then the diskette inserted in that drive is the *logged disk*. You will learn more about disk drives in later chapters.

Diskettes

Today, the most common storage device is the **diskette**, also known as a **disk** or **floppy disk**. It is simply a circle cut from a sheet of Mylar plastic that has an oxide coating capable of holding magnetic spots.

The diskette is very popular because it is reusable and easy to store. It provides a sense of security because it can be removed from the system unit that uses it, unlike a hard disk. You also may use the diskette to copy and store information that has also been saved on the hard disk.

Diskettes are now available in two different sizes: 5¼ and 3½ inches. The newest size—3½ inches—is used by IBM System/2 and is commonly referred to as a *microfloppy*. It is protected by a hard plastic case that is sturdier than the 5¼-inch diskette envelope. The 5¼-inch diskette, commonly called a *minifloppy*, is currently the most common one used for the IBM PC, XT, AT, and other computer brands.

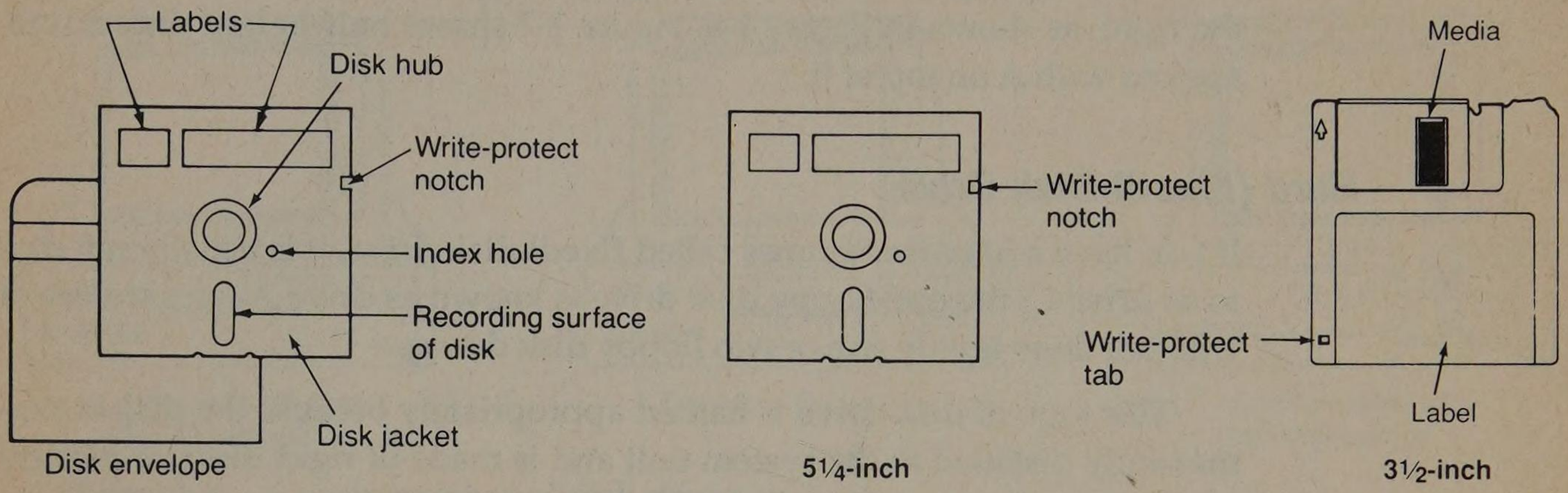


Figure 1-8 5¼- and 3½-inch diskettes.

Figure 1-8 shows the parts of the 5¼-inch and 3½-inch diskettes. The write-protect notch on the floppy diskette enables information to be saved to the diskette. If the notch is covered with a write-protect tab, you cannot save to the diskette, but you can read from it; this tab prevents accidental erasure of information from a disk. For the 5¼-inch diskettes, leaving the write-protect notch uncovered enables information to be saved to the diskette. Covering the notch, information can be read from, but not saved to the disk. The 3½-inch diskettes work differently. Sliding the tab toward the edge of the disk write-protects the diskette, while sliding the tab away from the edge enables information to be written to the disk. The drive uses the index hole to keep track of where the disk is, that is, what part of the disk is being used.

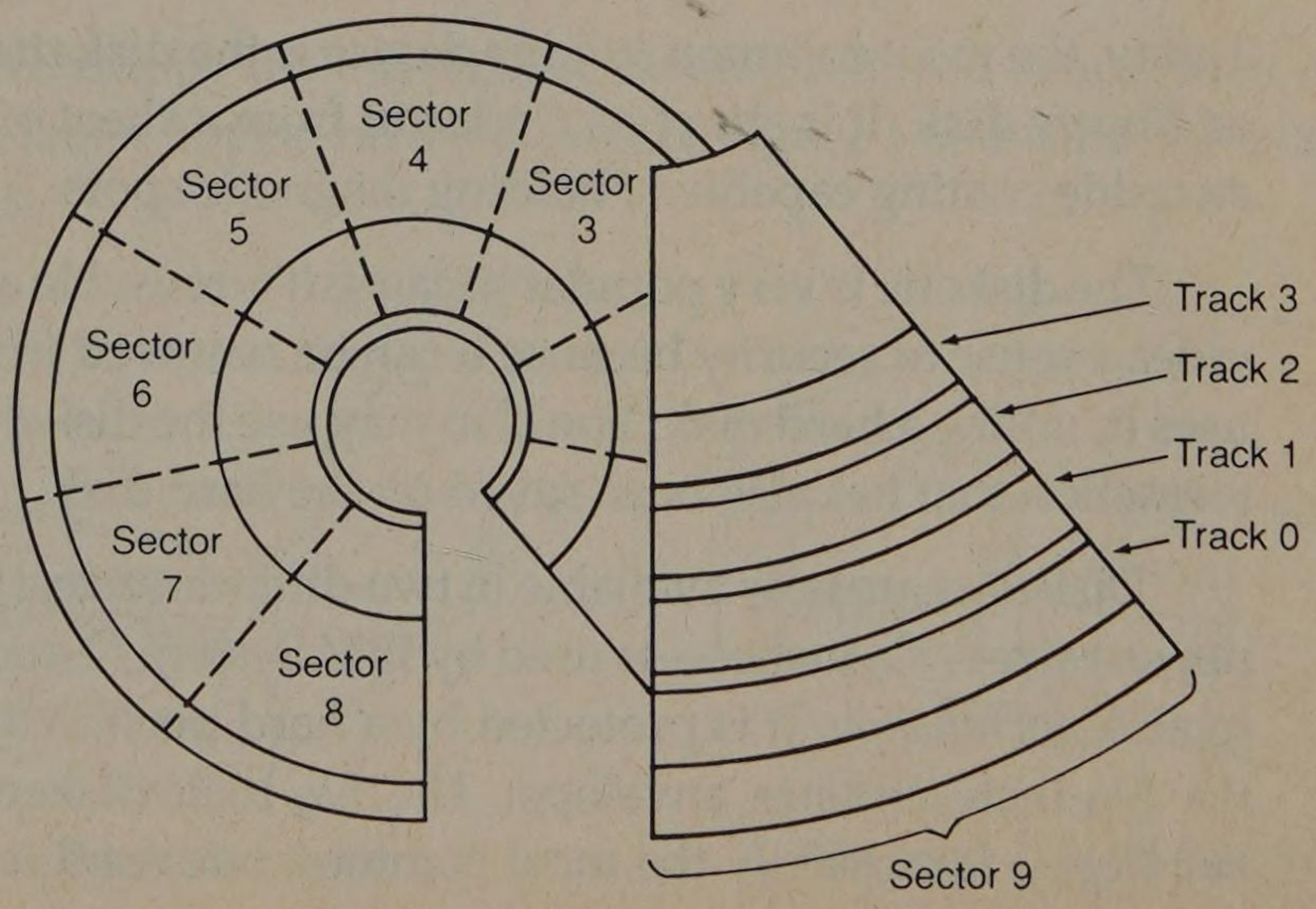


Figure 1-9 Tracks and sectors on a diskette.

Information is written (stored) on concentric circles called *tracks*. These tracks are divided into sectors. The number of tracks determines a diskette's storage capacity or density. You will learn more about a diskette's capacity in a later section in this chapter. Figure 1-9 shows how a diskette with tracks and sectors looks.

Types

The popular diskette type is **double-sided** (DS—information is written on both sides). Earlier IBM personal computers used single-sided diskettes. Information is written in either high-density (HD) or double-density (DD). High-density diskettes are also referred to as high-capacity (HC).

The 5¼-inch (minifloppy) DSDD diskette is used in PCs and PC-XTs, and the DSHD diskette is used in ATs. The 3½-inch (microfloppy) DSDD diskette is used in PS/2 models 25, 30, and PC compatible; DSHD diskettes are used in PS/2 models 50, 60, and 80.

Follow this step to determine your type of diskette:

1 Determine the type of diskette you are using by checking the appropriate space:

   a. For 5¼-inch floppy: DSDD _____ DSHD _____

   b. For 3½-inch floppy: DSDD _____ DSHD _____

Care

Diskettes must be handled with extreme care to prevent damaging them or any information stored on them. Follow these nine steps in caring for your disks:

1. Keep diskettes in their protective envelopes when they are not being used.
2. Avoid bending diskettes.
3. Store diskettes away from extreme heat and away from any piece of equipment that may contain a magnet, such as a magnetic paperclip holder or telephone receiver.
4. Insert diskettes carefully into the disk drive to avoid jamming them; make certain that the label is toward you and the write-protect notch is to the left.
5. *Never* insert diskettes into the drive while turning the system on or off, while printing, or while the drive is running.

6. Do not exert pressure on diskettes. Either place a blank label on the disk and then write its name on the label using a felt-tipped pen, or write on the label before putting it on the diskette.
7. Do not touch the exposed recording surfaces.
8. Frequently make copies of your floppy diskettes. This process is called **backing up,** and the copy is called a **back-up.** (You will learn more about copying a diskette in Chapter 5.)
9. Keep your diskettes away from food, drinks, and smoke because these contaminants leave a residue that can damage the diskettes.

Disk Capacity

You learned that the CPU (central processing unit) controls RAM (random-access memory). You also learned that a byte is the smallest unit of storage. A byte is a character, such as in the term CPU, which has three bytes, or characters. Remember that a K (kilobyte) equals 1,024 bytes.

Disk capacity for storage is also measured in bytes. The following types of diskettes can be used to read and write information:

1. A *single-sided, single-density* 5¼" diskette contains 40 tracks, 8 or 9 sectors per track, and holds up to 160/180K of information. These diskettes are used on older personal computer models.
2. A *double-sided, double-density* 5¼" diskette contains 40 tracks, 8 or 9 sectors per track, and holds up to 320/360K.
3. A *double-sided, double-density* 3½" diskette holds up to 720K and contains 80 tracks, 9 sectors per track.
4. A *high-capacity double-sided* 5¼" diskette contains 15 sectors per track, and holds up to 1.2M. (M stands for mega, meaning million; thus 1.2 M equals 1,048,576 bytes.)
5. A *high-capacity double-sided* 3½" diskette holds up to 1.44 M.

   A hard disk has the capacity of 10, 20, 30, 40, and more megabytes. For example, a 30M hard disk has the capacity for 30 million bytes.

Diskette and Drive Compatibility

Your diskette and disk drive must be compatible to allow reading and writing. For example, using a double-sided 320/360K drive, you can read and

write information to single-sided and double-sided 320/360 diskettes. However, you cannot read and write information on a 720K diskette using a single-sided, double-sided (320/360K) or a 1.2M capacity drive.

Printer

A printer is like a typewriter in that it prints information on paper. However, whereas a typewriter prints each character as you enter it, a printer prints out data only after you have entered all the characters. A printer and a typewriter have some similar parts: a platen, a paper bail, and a paper release. Figure 1-2 shows a computer printer.

There are different types of printers. Basically, all computer printers can be divided into two groups: **impact** and **nonimpact** printers. The terms impact and nonimpact refer to the method of transferring characters from the computer's main memory to paper. Impact and nonimpact printers can be further divided into another category, according to how they form characters or images: as fully formed characters similar to the characters a typewriter prints or by an array of dots.

Impact printers form characters or images by a printer mechanism striking paper and imprinting the characters via a ribbon. There are three types of impact printers: **dot matrix, letter quality,** and **line** or **page** printers.

Nonimpact printers have a printer mechanism that prints text without touching the paper. **Ink-jet** printers and **laser** printers are types of nonimpact printers that produce letter-quality print.

Complete the following steps concerning your printer:

1 Determine the type of printer you are using. Check one of the following:

a. Impact printer _____

b. Nonimpact printer _____

2 Determine the brand of printer you are using.

Brand name _____

Summary

Hardware means the physical parts of the computer, such as the the keyboard, monitor, system unit, and printer.

Software means the programs of instructions that interact with the keyboard, monitor, other hardware, and the user.

DOS is the acronym for disk operating system, the program which manages the way data are written to and read from the diskette or disk. DOS also performs other tasks, such as printing and storing files.

The four basic computer functions are **input, processing, output,** and **storage.**

The four basic components of a computer system are the **keyboard, monitor, central processing unit,** and **printer.**

Two basic types of memory are **ROM** and **RAM.** ROM is the memory that holds the instructions built into the computer's circuitry when the memory is manufactured. RAM is the memory accessible to you.

A **disk drive** is the device that writes information onto a diskette or disk from memory and reads (plays) it back into memory.

Two basic types of drives are **floppy** and **hard (fixed).**

The **logged disk drive** is the disk drive in use.

The two basic types of printers are **impact** and **nonimpact.**

2

Getting to Know DOS

As mentioned in Chapter 1, a computer system is divided into hardware and software. So far we have discussed the basic hardware components of a computer system. In this chapter you will learn about software and the operating systems.

Software is the element that transforms the hardware (the computer and its parts) into a usable and productive tool. The hardware does not know what to do without instructions to tell it what to do, how to do it, and when to do it. Software provides the instructions for the computer to follow. Software is divided into at least two basic groups: applications software and disk operating system (DOS).

Applications software includes computer instructions on a diskette to perform specific tasks, such as word processing, spreadsheets, databases, communications, graphics, and desktop publishing. The applications software will run on the computer only if it has DOS. In other words, you cannot turn on the computer and start an applications software program without first starting with DOS.

DOS and What It Does

The disk operating system (DOS) is a category of software. The DOS program is on a disk that is purchased along with the hardware and comes with a comprehensive reference manual. You should become familiar with the reference manual to get the most out of your program.

DOS controls the computer operations and interfaces with the applications software, the hardware, and the user, and it transforms all this into a computer system. In other words, DOS is the coordinator for your computer system. You the user interact with DOS by giving commands that the computer recognizes. For example, the commands are keyboarded using English-like words, such as COPY, DELETE, and FORMAT. You will learn more about DOS commands in Chapters 4, 5, and 6.

PC- or MS-DOS?

Various brands of computers use different disk operating systems. For example, **PC-DOS** (personal computer disk operating system) is designed for the IBM personal computer. However, computers such as Compaq, Hewlett Packard, and others use **MS-DOS** (Microsoft disk operating system).

Microsoft Corp. designed the original PC-DOS for IBM; they designed MS-DOS for other brands of computers, such as Compaq. Of course, computer companies such as Apple and Tandy Radio Shack have developed their own operating systems (Apple DOS and TRS DOS). The two most popular disk operating systems—PC-DOS and MS-DOS—are very similar in nature, and most of the commands will perform the same functions. You should check your computer's software requirements and as to which operating system is

specified and become familiar with the commands for that particular operating system.

Complete the following step concerning your DOS system:

1 Check the DOS system you are using on the microcomputer in front of you.

PC-DOS _____ or MS-DOS _____

DOS Version Numbers

As software programs are improved and enhanced, a different version number is assigned to them. For example, the original PC-DOS's version number was 1.0. In other words, as errors are corrected, more sophisticated hardware is developed, and as more software capabilities are added, the version numbers will change. The number preceding the decimal indicates a major change; the number following the decimal marks a minor change.

Figure 2-1 is an overview of major differences among the DOS versions.

1.0	Original version
1.1	Introduced double-sided diskettes
2.0	Introduced hard disks and IBM AT
2.1	Accommodated half-height disk drives and introduced IBM portable personal computer
3.0	Enhanced support for IBM ATs, better support for larger hard disks, and limited networking capabilities
3.1	Refined networking capabilities
3.2	Supported 3½-inch microfloppy diskettes
3.3	Supported IBM's line of PS/2 computers

Figure 2-1 Differences among DOS versions.

How can you tell which DOS version you have? The number is printed on the label on the DOS diskette or disk. It may also appear on your screen when you first start up DOS, as Figure 2-2 shows.

IBM Personal Computer DOS Version 2.0

Figure 2-2 Initial DOS screen.

NOTE: Your screen may appear differently, depending on your version.

In Chapter 6 you will learn how to check the DOS version by using commands at the keyboard.

Summary

Software is divided into at least two basic groups: applications software and disk operating system (DOS).

Applications software includes computer instructions on a diskette to perform specific tasks, such as word processing, spreadsheets, databases, communications, graphics, and desktop publishing.

Disk operating system (DOS) runs the computer operations and interfaces with the applications software, the hardware, and the user.

PC-DOS (personal computer disk operating system) is designed for the IBM personal computer.

MS-DOS (Microsoft disk operating system) is designed for other brands of computers.

As disk operating system software is improved and enhanced, a new DOS number indicating the version is assigned to it.

3

Running DOS

In this chapter you will learn how to start the computer and load DOS into the computer's memory. You will also leam how to change disk drives, reboot the system, and turn off the computer.

Booting the Computer: Floppy Diskette Drive System

To start your computer, you must complete the booting process, sometimes called "loading the system." **Booting** is the process of loading and running the operating system: A copy of the DOS internal commands is read from DOS and placed into the computer's memory. DOS **internal commands** are the commands that stay in the computer's memory until you turn off the computer or load DOS again. (There is more information about DOS commands in Chapters 4, 5, and 6.) How you boot the computer depends on whether you are using a floppy diskette or a hard disk drive system.

Use the following steps to start up your computer:

1. Open the latch of drive A (the left-hand drive or the upper drive).
2. Hold the DOS diskette with the label up and away from the computer and carefully slide it all the way into drive A; close the latch.
3. Turn the computer on. Be sure to turn on your monitor as well.

When the computer is loading a disk, the **in-use light** comes on. The in-use light is on the front of the computer by the disk drive. Do not open a disk drive if the in-use light is on.

You may not think anything is happening during this time; however, the computer is checking its memory and all the attached devices (such as monitor, printer, and keyboard) to be certain that everything is working properly. When this process is completed, DOS will be copied into the computer's memory from the diskette in drive A. The system beeps when it has checked everything in the system.

4 If your computer is already on, press and hold down simultaneously in this order: the Ctrl, Alt, and Del keys. Then release all three keys.

TIP: Use the command Ctrl-Alt-Del to restart the system *only when the power is already on.* Do not use this command to restart the system when you are making changes in data because the changes you have made will not be saved.

To practice booting the computer, complete these two steps.

1 Obtain the DOS diskette.

2 Boot the computer.

TIP: If you are using an IBM PC (two-floppy diskette drive system) and the word BASIC appears on the screen when you boot, check the drive door to be certain that a diskette has been inserted and that the latch is closed. IBM stores a portion of its BASIC program in the ROM. If you do not place DOS in drive A to load the system or if you do not close the latch door, the computer cannot find DOS to load; therefore, the computer reverts to BASIC. This is not a problem with non-IBM computers.

Start-up Message

The start-up message will appear. Your screen will look similar to the one in Figure 3-1.

```
Current date is Tue 1-01-1980
Enter new date (mm-dd-yy): __
```

Figure 3-1 Start-up message.

Date

Some computers have internal clocks that record the date automatically. If your DOS diskette does not have an AUTOEXEC.BAT file, DOS automatically prompts you to enter the correct date. If there is a date request appearing on your screen, respond to the request. If you do not have either a date or time request, skip to the section "System Prompt."

Respond to the date request by completing the following steps.

1 If the date is correct, simply press Enter (↵).

2 If the date is incorrect or blank, type the date, using the month-day-year format, separating the numbers with hyphens. For example, for July 9, 1988, type 7-9-88, 07-9-88, or 7/09/88; and then press Enter.

a. For the number 1, use the number 1 in the top row. Never use the lowercase letter l for the number 1.

b. If you have not entered the date correctly, the following prompt appears:

Invalid date

TIP: Use the Backspace key (←) to correct typing errors *before* you press the Enter key.

3 If you have entered the date correctly, your screen will look similar to the following:

```
Current date is Tue  1-01-1980
Enter new date (mm-dd-yy): 8-20-88
Current time is 0:01:45.00
Enter new time: _
```

Time

Complete the following steps to respond to the time request:

1 Type the correct hour and minutes, with the colon (:). The DOS program uses a twenty-four hour clock. For example, 8:10 means 8:10 A.M., 20:10 means 8:10 P.M. Press Enter after the time has been entered.

2 If you have not entered the time correctly, the following message appears:

Invalid time

3 If you have entered the time correctly, your screen should appear similar to this:

```
Current date is Tue 1-01-1980
Enter new date (mm-dd-yy): 8-20-88
Current time is 0:01:45.00
Enter new time: 9:40
The IBM Personal Computer DOS Version 2.0
A>
```

TIP: Your computer may have been assembled using a special program, whereby the date and time prompts will be bypassed. For example, the date and time are automatically calculated and will not appear on your screen. However, if the date and time do not appear on your screen, you may verify them by using the DATE and TIME commands (you will learn these commands in Chapter 6).

If you have successfully booted your computer the screen will show the following prompt:

```
A>
```

Booting the Computer: Hard Disk Drive System

The following instructions assume that the DOS system diskette has been prepared (installed) on your hard disk drive system.

Boot your computer by completing the following steps:

1. Be sure to leave the latch open on drive A.
2. If the computer is off, turn on the power.
3. If the computer is on, hold down the Ctrl and Alt keys with your left hand and press the Del key with your right hand (hold down all keys at one time). The Ctrl, Alt, and Del keys are used to restart your computer if it is already on.

   If you have successfully booted your computer, the screen will show the following prompt:

   ```
   C>
   ```

TIP: If you did not boot the computer successfully the first time, remember to check for the following tips and reboot the system.

1. A simple typing error.
2. Incorrect punctuation or format.
3. Use of the numeric keypad instead of the numbers along the top of the keyboard.

System Prompt

When the prompt A> or C> appears, the system is ready and prompting you to type a command. The system is also identifying the logged (sometimes called default) drive. The **logged drive** is the current or active drive; it is the drive that responds to the commands you enter.

Logged Disk Drive

In Chapter 1, disk drive names were discussed: For a two-floppy disk drive system, the left-hand (or upper) drive is drive A; the right-hand (or lower) drive is drive B. For a hard disk drive system, the left-hand drive is identified as both A and B; the right-hand (hard disk) drive is drive C. Remember that DOS is loaded from drive A for a floppy disk drive system and from drive C for a hard disk drive system.

Changing Drives

You can change the logged (default) disk drive. If you are using a hard disk drive system, skip this section and complete the instructions for a hard disk drive system. Complete the following steps if you are using a two-floppy disk drive system.

To change the logged drive from A> to B>, follow these steps:

1. Type b and a colon (:) as shown here:

   ```
   A>b:
   ```

2. Press the Enter key.

The system prompt will display the new logged drive B>. This means that DOS will look in drive B unless told otherwise.

To change from drive B back to drive A, complete these steps:

1. Type a and a colon (:) as shown here:

   ```
   B>a:
   ```

2. Press Enter.

The prompt A> will appear as the new logged disk drive.

To change the logged drive from drive C (for a hard disk drive system) to drive A, use these steps:

1. Insert the Data Diskette into drive A.
2. Type a and a colon (:) as shown here:

   C>a:

3. Press Enter.

   The new logged disk drive A> will appear.

4. Change from drive A back to drive C.

   Now your screen should display the system prompt A> (using a two-floppy system) or C> (using a hard-disk system).

Rebooting the Computer

Rebooting the computer means reloading DOS. It is not necessary to turn the computer off and then on again to load DOS.

To reboot the computer, follow these two steps:

1. Hold down both the Ctrl and Alt keys with your left hand and press down the Del key with your right hand (press all three keys at the same time). The screen clears, the red light on drive A (or drive C) comes on, the system beeps, and DOS is loaded.
2. If necessary, re-enter the date and time. The start-up message and system prompt A> (or C>) appears on the screen.

There are three possible reasons why you may have to reboot your computer. First, although software program failures are rare, they still can occur. Second, a power surge may cause your computer to stop. Third, you may want to stop the computer from doing whatever it is doing. Rebooting allows you to restart the computer.

Turning Off the Computer

If you are continuing to the next chapter, do not turn off the computer at this time. However, if you are quitting this computer session, follow the steps below to turn off the computer.

NOTE: Depending on your computer system, you may need to follow different steps to turn off your computer. Check with your instructor for specific directions for turning off your computer.

To turn off the computer, follow these two steps:

1. At the system prompt, remove all diskettes from the drives.
2. Turn off the power switch.

CAUTION: Turning off the power while the drive is in use may damage the data on the diskette or hard disk drive system.

Summary

Booting is the process of loading and running the operating system: A copy of DOS's commands is read from DOS and placed into the computer's memory.

The three keys— **Ctrl**, **Alt**, and **Del**— are used to restart the computer only when the power is already on.

The **logged drive** is the current or active drive that responds to the commands you enter.

Rebooting means reloading DOS.

To turn off the computer, be certain to first remove all diskettes from the drives.

4

DOS Basics

Now that you are more familiar with the hardware, this chapter introduces you to different types of files, file names, uses of DOS commands, and types of DOS commands. You will learn how to enter a DOS command, correct a keyboarding error when giving a command, and cancel a DOS command.

What Is a File?

A **file** is a collection of related information stored on either diskettes or a hard disk. Computer files are similar to the files in a filing cabinet drawer. But rather than being stored in a file drawer, computer files are stored in a directory on a diskette or a hard disk. Paper files are kept in file folders that are stored in the proper filing cabinet according to their file label name. When you need a file, you usually request it or look for it by the name on its label. Just as paper file folders have labels, a file is kept on the diskette or disk by a unique name. Figure 4-1 illustrates the differences:

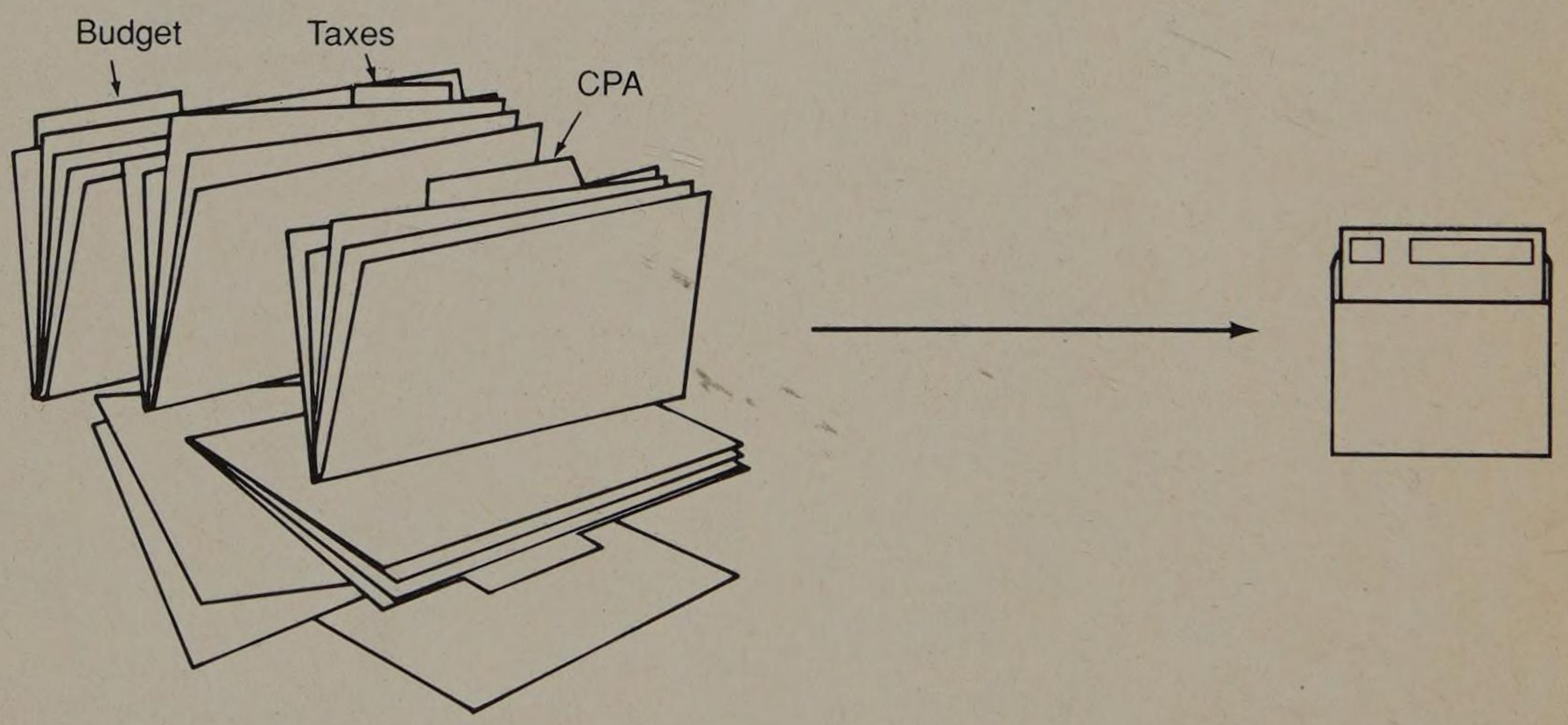


Figure 4-1 Paper and computer files.

File Types

There are three types of files that can be stored: text files, data files, and program files. A **text file** contains text that you create by using a specific applications software, such as word processing or spreadsheet. You create a text file, edit it, and print it. In other words, you have access to this file so you can maintain it.

Files that contain instructions that make DOS tell the computer how to manipulate data are known as **data files**. Data files are written in computer language and are read by the computer, but you do not have access to these files.

Program files are created by programmers and contain instructions that the computer can execute. For example, applications software programs are written to perform specific tasks, such as word processing, communications, or database, or to solve a specific task, such as general ledger for bookkeeping.

File Names

A **file name** may consist of two parts: the file name (similar to the file label on a paper file folder) and the extension, as shown here:

file name.extension

Example: BUDGET.DRF

If you want to use a paper file folder, you must refer to it by its file name. The file name in a computer system is also mandatory, as it is in a paper filing system. Although the extension is optional, its use is recommended to help you organize your files.

File Extensions

To help you better describe a file and distinguish among similar files, you are often allowed to use an extension. An effective way to use an extension is to create groups of similar files. For example, you may want to use the extension .LTR for all letters, .MEM for all memorandums, and .REP for all reports.

A file extension immediately follows a file name and consists of a period and one to three characters. If you do not use the extension, do not type the

period after the file name. Following are additional examples of standard extensions and their meanings:

.COM	Command file
.HLP	Help file
.BAK	Backup file
.DTA	Data file
.TXT	Text file

Some files require an extension in the file name. For example, DOS uses certain extensions in file names, such as .SYS (for system) and .BAT (for batch), for specific purposes. You will learn more about these extensions when you begin working with DOS.

The same rule just explained applies to text files. For example, in the file name PROPOSAL.TXT an extension has been added. Other applications programs use special extensions with their file names; for example, Lotus 1-2-3 uses .WK1 for its worksheet, and dBASE III Plus uses .DBF.

TIP: A general rule of thumb is that if the file name is followed by an extension, you should use both the file name and its extension.

Special DOS Extensions

DOS uses special extensions, which you should avoid using when naming your files.

CAUTION: Do not use the following extensions because they are reserved for use by DOS: COM, EXE, SYS, BAK, BAT, AUX, LPT, and PRN.

Rules for Naming Files

There are four basic rules to follow when naming a file or requesting a file that is to be displayed on your screen. Each file name may:

1. Contain one to eight characters.
2. Not contain spaces or commas.
3. Be typed in upper- or lowercase letters.
4. Not use previous names.

Generally, special characters such as $ # @ ! % ( ) { } - ' and ~ may be used in file names. However, you should check to see if these characters are acceptable for your operating system and software programs. For instance, the file name BUDGET.'88 may be acceptable when working with one software program but unacceptable with another program.

In the following list, check each file name as either valid or invalid.

	File Names	Valid	Invalid
1	HENRY.LTR	____	____
2	ROCHELLE.REP	____	____
3	ROCHELLE.LTR	____	____
4	ROCHELLE .REP	____	____
5	ROCHELLE.REP1	____	____

Answers:

1. Valid.
2. Valid.
3. Valid.
4. Invalid; file name cannot have a space.
5. Invalid; extension has four characters; only three characters are allowed.

Uses of DOS Commands

Following are various ways you can use DOS commands:

1. Prepare (format) disks for files to be created and saved.
2. Display file names in a directory.
3. Copy, delete, and rename files.
4. Set various printer and screen options.
5. Request DOS to pause while running a command.
6. Backup and restore files.
7. Copy DOS to another disk.
8. Recover a specific file from a damaged disk or recover the entire disk.
9. Check for disk errors and amount of memory available on disk.

10. Create directories and subdirectories on a hard disk drive system.
11. Print a file created by DOS.

There are many other uses of DOS. For additional information, refer to the DOS reference manual.

DOS Command Types

One way to become familiar with the DOS commands is to divide them into types. The two types of DOS commands are internal and external.

Internal

Internal commands, sometimes referred to as *permanent commands*, are built into the main part of DOS. Because these commands are always available in the computer memory once DOS is loaded, specific functions can be performed immediately. Therefore, once DOS is loaded into the computer memory, you can request an internal command by simply typing the command name at the system prompt. On a floppy disk drive system, this means that you will not need your DOS diskette for these commands if DOS is already booted.

External

External commands, sometimes called *utilities* or *temporary commands*, are housed on DOS as separate program files. This means that the diskette containing the specific command file must be actually in the drive before the desired function can be performed. Any DOS file with a file extension of .BAT, .COM, or .EXE is considered an external file.

The list in Figure 4-2 shows several of the basic DOS commands divided according to whether they are internal or external:

Internal	External
Clear Screen (CLS)	Checkdisk (CHKDSK)
Copy (COPY)	Diskcopy (DISKCOPY)
Delete (DEL)	Format (FORMAT)
Rename (REN)	
Directory (DIR)	
Time (TIME)	
Date (DATE)	
Version (VER)	
Volume (VOL)	

Figure 4-2 Internal and external DOS commands.

In the following list, place a check mark in the appropriate column to indicate the type of command:

	Command	Internal	External
1	VER	____	____
2	CLS	____	____
3	COPY	____	____
4	DEL	____	____
5	FORMAT	____	____
6	DISKCOPY	____	____
7	REN	____	____
8	DATE	____	____
9	CHKDSK	____	____
10	DIR	____	____

Answers:

1. Internal
2. Internal
3. Internal
4. Internal
5. External
6. External
7. Internal
8. Internal
9. External
10. Internal

DOS Commands By Their Function

You can also become familiar with DOS commands by their function: managing files and managing disks. Figure 4-3 lists some of the common DOS commands according to their applications to either a file or a disk.

File	Disk
Copy	Checkdisk (CHKDSK)
Directory (DIR)	Diskcopy
Delete (DEL)	Format
Rename (REN)	System (SYS)

Figure 4-3 File and disk DOS commands.

Rules for Entering DOS Commands

There are certain rules to follow when entering DOS commands so that the desired function can be executed correctly. Study these seven rules:

1. Enter the command without any typing errors. For example, DOS or any applications software program would not recognize the following command because the word "copy" is misspelled:

   b:copu report1

   (Later in this chapter you will learn how to correct typing errors in entering DOS commands.)

2. All punctuation—colons, slashes (/), asterisks (*) and so on—must be entered as shown in the commands. DOS would not recognize the following command because an incorrect punctuation mark, a semicolon (;), has been used; a colon (:) should have been entered after the b rather than the semicolon(;).

   b;copy report1

3. Spacing must be included where shown. Study the following examples:

   b:copy report1 (Correct entry)

   b: copy report1 (Incorrect entry because space follows colon)

   b:copy report 1 (Incorrect entry because space follows the file name Report)

4. Press the Enter (↵) key to execute the command.
5. Specify the correct disk drive with a:, b:, or c: where necessary.
6. You can type commands in upper- or lowercase letters or a combination of both. For example, you can type:

   Dir B:

7. Be certain that you insert the diskettes into the proper drives.

TIP: When the message Press any key to continue appears, it means press *almost* any key. For example, if you press Alt (for Alternate) or Caps Lock, DOS will disregard the key and continue to wait until you press another key. You can press any character key.

The Directory

As mentioned in the beginning of the chapter, the **directory** is the computer file drawer that lists all the files recorded on a diskette or hard disk. DOS automatically maintains the directory. For example, when you create and save a file, DOS automatically adds it to the directory. If you revise or delete a file, DOS updates the directory to include the latest revised file or to delete the file from the directory.

To **display the directory** on your screen, you must enter the internal Directory command (DIR) and press Enter. The following example illustrates the system prompt (drive A) and the DIR command:

A>dir

If you were requesting the directory to be displayed on drive B, this next example shows the system prompt and the DIR command:

B>dir

```
dir a:

 Volume in drive A has no label
 Directory of A:\

BUDGET     OFC    209   3-23-88   5:53p
COLUMNS           352   3-23-88   4:34p
CURSOR            359   3-15-88   3:33p
ENCHANT           807   6-17-88   8:01a
CREDIT           2115   3-29-88   9:53a
EDIT              498   3-11-88  11:54p
ERRORS            255   3-11-88   7:40p
LIBRARY    REF    967   6-05-88   7:18a
ORGMTG            812   3-15-88   1:21a
PROJECT           789   3-17-88   8:48a
RHINEWAY          711   3-29-88   9:26a
ROGERS            105   6-05-88   8:09a
SPACING           329   3-22-88  11:55p
LIBRARY          1023   6-05-88   7:12a
LONGHORN          639   3-24-88  10:32p
RETURNS           606   3-08-88  11:01p
SUBSCRIB          121   3-16-88   9:19a
TABS             2981   3-14-88   7:38p
RECORDKE          594   3-13-88   3:00p
CALENDAR SVM     5437   8-22-88   4:31p
LIB1       REF     62   6-05-88   7:51a
LIB3       REF    173   6-05-88   7:54a
LIB4       REF    138   6-05-88   7:55a
LIB2       REF   1162   6-05-88   8:31a
LIB5       REF    109   6-05-88   7:57a
LIB6       REF     94   6-05-88   7:58a
LIB7       REF    130   6-05-88   7:59a
LIB8       REF     68   6-05-88   8:00a
LIB9       REF     58   6-05-88   8:01a
LIB10      REF    139   6-05-88   8:19a
SINCEREL           69   9-06-88   8:31a
EXIT              288   9-06-88   8:42a
RETRIEVE          344   3-08-88  11:40p
DTPPANEL   OFC   2099   9-06-88   8:46a
        34 File(s)     315392 bytes free

A:\>
```

Figure 4-4 Directory files.

If you were using drive C (hard drive) and entered the DIR command, the following would appear on your screen:

```
C>dir
```

If you use the DIR command without specifying the drive, the directory will be displayed for the logged or current drive as shown previously. However, if you want to specify the drive, enter this command:

```
C>dir a:        (Be certain a diskette is in drive A.)
```

This command would display the directory of diskette in drive A.

TIP: | The DIR command can display only one directory at a time.

Figure 4-4 shows an example of the directory's files. The first line displays the disk's volume label. You can assign a descriptive volume label to your diskettes to ensure that you are using the correct diskette. This example does not show a label. (You will learn more about volume labels in Chapter 6.)

The second line indicates the logged disk drive from which the directory is to be displayed. The backslash (\) represents the main or root directory. (You will learn more about the root directory in Chapter 7.)

The last line in the directory indicates the number of files currently in the directory and the bytes available for storing more files.

Parts of the Directory

Figure 4-5 labels the parts of one file from a directory. The directory entry shows the following for a file:

1. File name—LIBRARY (no more than eight characters long)
2. File extension—REF (no more than three characters long)
3. Length of file—967 (shown in bytes)

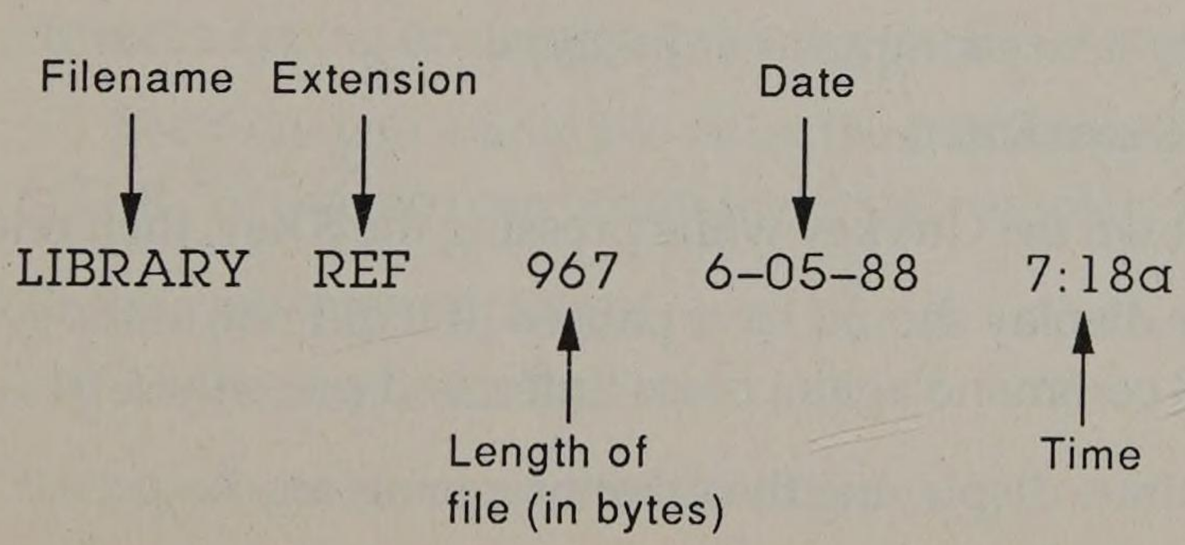


Figure 4-5 Parts of a file.

4. Date (either when the file was first created or last revised)
5. Time (either when the file was first created or last revised)

Complete the following steps to display the directory:

1 If you have not started your computer, boot the system from drive A or drive C (for a hard disk drive system).

2 Insert the Data Diskette into drive B (or drive A if using a hard disk drive system).

3 Display the directory in drive A (or drive C if using a hard disk drive system) by typing:

dir (Press Enter)

4 Change the drive from A to B (from C to A if using a hard disk drive system) by typing the new drive letter followed by a colon (:) and then press Enter to execute the command.

5 Display the directory for the new drive by typing:

dir (Press Enter)

6 Change the drive from B to A by typing A: (Press Enter) (or from A to C by typing C: (Press Enter) if using a hard disk drive system).

Your system prompt should be displaying either A> or C>.

You will learn more about the DIR command in Chapter 5.

Freezing the Display

You can stop the display from moving up (referred to as scrolling) by using the Ctrl and S keys or the Ctrl and Num Lock keys.

To freeze the display, follow these steps:

1 At the system prompt A> or B>, type:

dir (Press Enter)

2 Hold down the Ctrl key while pressing the S key, then release.

The display should have paused. If it did not, at the system prompt, type the DIR command again, press Enter, and press the Ctrl and S keys again.

3 To continue displaying the directory, press any key.

Canceling a DOS Command

Suppose you enter a command and then realize that you should have entered a different command or you changed your mind about entering this command. You can stop most DOS commands from executing by entering certain keystroke combinations.

Study the following keystrokes:

1. Hold down the Ctrl (Control) key with your left hand and press the Break (Scroll Lock) key with your right hand; *or*
2. Hold down the Ctrl key and press C.

NOTE: DOS ignores the Ctrl-C combination sometimes when canceling a command, whereas it will accept Ctrl-Break more effectively.

To **cancel a DOS command**, follow these steps:

1. From drive B (or drive A if using a hard disk drive system), enter the DIR command to request the directory. Press Enter.
2. Hold down Ctrl and press Break when DOS begins to display the entries.

DOS stops or cancels what it is doing, displays ^C (^ stands for Ctrl and C for Cancel) at the stopping point, and returns to the system prompt.

TIP: If you did not hold down the Ctrl and Break keys quickly, the directory may already have displayed and DOS did not cancel the command. Try the command again.

Correcting a Typing Error in a DOS Command

Press the Backspace key (←) to move the cursor back one or more spaces to **correct** a typing error *before* pressing the Enter key.

Let's say you wanted to enter the DIR command and typed DIO instead of DIR. To practice correcting the error, complete the following steps:

1. At the system prompt, type:

   dio (Do not press Enter.)

2. Backspace (←) to erase the letter o.
3. Type: r (to correct the error).
4. Press Enter.

5 If you are quitting this computer session, follow the steps (Chapter 3) for turning off your computer.

6 If you are continuing, be certain the system prompt is displayed on your screen.

Error Messages

Error messages are displayed on your screen to help you correct a situation, such as giving additional information, inserting a different diskette, or correcting a command. For example, a message will appear on your screen if you enter an incorrect format for date and time when booting the system. Appendix B contains several of the most common error messages.

Summary

A **file** is a collection of related information stored on either diskettes or a hard disk.

A **text file** contains text that you create by using a specific applications software.

Data files contain instructions that make DOS tell the computer how to manipulate data. These files are read by the computer.

Program files are created by programmers and contain instructions that the computer can execute.

A **file name** may contain one to eight characters, may not contain spaces or commas, may be typed in upper- or lowercase letters, and may not use previous names.

Internal commands are built into the main part of DOS. Once DOS is loaded into the computer memory, you can request an internal command by simply typing the command name at the system prompt.

External commands are housed on DOS as separate program files. The disk containing the specific command file must actually be in the drive before the desired function can be performed.

DOS commands can also be listed according to their functions of managing files and managing disks.

DOS commands must be entered correctly, using correct punctuation and spacing and the correct disk drive.

The **directory** is the computer file drawer that lists all the files recorded on a diskette or hard disk.

To **display the directory**, enter DIR at the system prompt and then press Enter.

The **directory entry** shows the file name, extension, length of file (in bytes), date, and time.

To **cancel a DOS command**, press the Ctrl and Break keys.

To **correct** a typing error in a DOS command, press the Backspace key.

Applications

Complete Chapter 4 Exercises in Appendix C before moving to Chapter 5.

5

Essential DOS Commands

Now that you have learned the DOS basics, you are ready to learn the commands that are essential for beginning to use DOS effectively. This chapter emphasizes the following essential commands for routine DOS operations: Directory (DIR), Format (FORMAT), Copy (COPY), Diskcopy (DISKCOPY), Delete (DEL), and Rename (REN).

More About the Directory

In Chapter 4 you learned how to enter the DIR command. Here we take a closer look at the DIR command and some useful ways to manage your files. Remember that the **DIR command** is one of the most helpful DOS commands because it tells us about our files and diskette or hard disk. As you recall from the last chapter, this command tells us file names, extensions, the size of the file in bytes, the date and time when files were created and/or revised, the number of files on a disk, and how much space (how many bytes) is left on the disk for future use.

Wildcards (Global File Name Characters)

Before you begin entering additional DOS commands, let's take a look at wildcards. Normally, if you knew a file name, to work with it (to copy the file, rename the file, and so on) you would enter it as it appears in the directory. However, this becomes tedious when you have many files involved. For instance, to locate fifteen files and then copy them is a very time-consuming procedure if handled file by file.

DOS offers a shortcut for locating groups of files and files whose names you do not remember. This shortcut uses **wildcards**, sometimes referred to as global file specification, which enable you to easily work with related groups of files. When people are playing cards, the joker is sometimes the wildcard, being substituted for any other card. Wildcard characters are used the same way in the DIR and other DOS commands.

DOS uses two special characters as wildcard characters in naming files: the question mark (?) and asterisk (*). The **question mark** represents or sub-

stitutes for a single character, and the asterisk represents or substitutes for a group of characters.

Using the Question Mark (?) Wildcard Character

A question mark in a file name or its extension specifies that any character can occupy that position. In other words, the question mark represents only one character in a file name or its extension. For example, the command

```
B>dir memo?.opm
```

will list all files on drive B with file names MEMO and any character in the fifth position with an extension of OPM (OPM representing Office of Personnel Management in this particular filing system). Following are three file names that might be displayed by the previous command:

MEMO1.OPM

MEMO2.OPM

MEMO3.OPM

If you knew the file extension .OPM, you could locate the files by entering five question marks (one per character) and the extension .OPM. The command would appear like this:

```
?????.OPM
```

DOS will display any file name with five characters and an extension of OPM.

To practice using the question mark wildcard with your Data disk, complete the following five steps:

1. Be certain your system is booted and the Data disk is in drive B (or drive A if using a hard disk drive system).
2. Change the logged drive to drive B (or drive A if using a hard disk drive system).
3. Type:

   ```
   dir lib??          (Press Enter)
   ```

   Files LIB1.REF through LIB10.REF should be displayed on your screen.

4 Type:

dir .ref (Press Enter)

Files LIBRARY.REF through LIB10.REF should be listed.

5 Type:

dir .ofc (Press Enter)

Files BUDGET.OFC and DTPPANEL.OFC should be listed.

Using the Asterisk (*) Wildcard Character

An asterisk in a file name or in a file extension indicates that any group of characters can occupy that position and all the remaining positions in the file name or extension. In other words, the asterisk represents one to eight characters in the file name or up to three characters in an extension. For instance, the command

B>dir me*.*

will list all files in the directory on drive B that begin with ME followed by up to six characters (the file name cannot exceed eight characters) and the file extensions may be one to three characters long. Following are three example files that might be listed by this DOS command:

MEMO1.OPM

MELVIN.REP

MEESE

If you wanted to list all files in the directory on drive A that begin with the letter D and have one to three characters in the extension, you would enter the following command:

A>dir d*.*

If you wanted to list all files that have a three-character extension ending with M on drive A, you would enter this command:

A>dir *.??M

To display a list of all files named BUDGET regardless of the extension, you would enter this command:

A>dir budget.*

To practice entering the asterisk wildcard using your Data diskette, follow these steps:

1. Display the system prompt B> (or prompt A> if using a hard disk drive system).
2. Type:

   dir C* (Press Enter)

   Four files beginning with the letter C should be listed.
3. Type:

   dir lib?.* (Press Enter)

   All files LIB1.REF through LIB9.REF should be listed. File LIB10.REF is not listed because the question mark asked DOS to display all the files named LIB and any additional file or files that would have a character in the fourth position where the question mark appeared in the DOS command.

Directory (DIR) Viewing Options

DIR Command with /W

If you want to view a directory for particular file entries and the directory has a long list of files, you can use the **DIR /W (wide) command**, which displays file names and extensions only in a wide format, in several columns across the screen. Figure 5-1 is a directory whose entries are displayed in a wide format.

To practice the DIR /W command, use the following steps:

1. Display the system prompt B> (or prompt A> if using a hard disk drive system).

```
A:\>dir /w

 Volume in drive A has no label
 Directory of A:\

BUDGET     OFC   COLUMNS        CURSOR         ENCHANT        CREDIT
EDIT             ERRORS         LIBRARY  REF   ORGMTG         PROJECT
RHINEWAY         ROGERS         SPACING        LIBRARY        LONGHORN
RETURNS          SUBSCRIB       TABS           RECORDKE       CALENDAR  SVM
LIB1       REF   LIB3       REF  LIB4     REF   LIB2     REF   LIB5      REF
LIB6       REF   LIB7       REF  LIB8     REF   LIB9     REF   LIB10     REF
SINCEREL         EXIT           RETRIEVE       DTPPANEL  OFC
        34 File(s)       315392 bytes free

A:\>
```

Figure 5-1 Wide format of a directory.

2 Type: dir/w (Press Enter)

All the files in the directory should be listed in a wide format. If the directory did not display, verify the command you entered. Be certain you used the forward slash (/) rather than the backslash (\).

DIR Command with /P

Another DIR option is to use the **DIR/P** (pause) **command** to display the directory and pause between screen pages. At each pause, the following message will appear:

Strike any key when ready . . .

This option will stop the directory from moving up the screen (referred to as scrolling) when the screen is full. Strike any key to continue the display. This screen should look like the one in Figure 5-2.

To execute the DIR /P command, complete the following steps.

1 The system prompt B> (or prompt A> using a hard disk system) should be displayed.

2 Type: dir/p (Press Enter)

A screenful of entries should be displayed.

3 Press any key to continue the listing.

```
BUDGET     OFC     209    3-23-88    5:53p
COLUMNS            352    3-23-88    4:34p
CURSOR             359    3-15-88    3:33p
ENCHANT            807    6-17-88    8:01a
CREDIT            2115    3-29-88    9:53a
EDIT               498    3-11-88   11:54p
ERRORS             255    3-11-88    7:40p
LIBRARY    REF     967    6-05-88    7:18a
ORGMTG             812    3-15-88    1:21a
PROJECT            798    3-17-88    8:48a
RHINEWAY           711    3-29-88    9:26a
ROGERS             105    6-05-88    8:09a
SPACING            329    3-22-88   11:55p
LIBRARY           1023    6-05-88    7:12a
LONGHORN           639    3-24-88   10:32p
RETURNS            606    3-08-88   11:01p
SUBSCRIB           121    3-16-88    9:19a
TABS              2981    3-14-88    7:38p
RECORDKE           594    3-13-88    3:00p
CALENDAR   SVM     5437    8-22-88    4:31p
LIB1       REF       62    6-05-88    7:51a
LIB3       REF      173    6-05-88    7:54a
LIB4       REF      138    6-05-88    7:55a
Strike a key when ready . . .
```

Figure 5-2 Pause between screen pages.

List a Specific File Entry

You have been listing all files in the directory. Suppose you want to know whether a particular file was in the directory. To locate a particular file, you would enter the following command:

```
dir enchant
```

The screen in Figure 5-3 is displayed because the file was found in this directory. However, if the file is not found in the directory, DOS will display this message:

```
File not found
```

TIP: DOS may not find the file because of a typing error. Check the file name for possible typing errors. Request the file again to be certain the file is not located in this directory.

To list a specific file name in a directory, follow these steps.

1. Be certain the system prompt is displayed.
2. Type: dir credit (Press Enter)

   The file CREDIT should be displayed.

Format (FORMAT) Command

A new diskette or hard disk drive system must be prepared to accept files for storage before it can be used by DOS. The command to prepare a diskette for use is called FORMAT. Other computer systems may refer to this command as INITIALIZE.

The **Format command** prepares the blank diskette or hard disk drive system in several ways: It sets up the directory, sets up the space for the file allocation table (FAT), analyzes the disk for bad sectors, and adds the boot

```
A:\>dir enchant

 Volume in drive A has no label
 Directory of A:\

ENCHANT         807    6-17-88     8:01a
          1 File(s)     315392 bytes free

A:\>
```

Figure 5-3 Listing a specific file.

command. It is not necessary to format a diskette or hard disk drive system every time you boot your computer; it *is* necessary the first time, before a diskette or hard disk drive system is ever used.

CAUTION: If you format a diskette or hard disk that already has information stored on it, the contents on the diskette or hard disk will be lost forever.

This external command requires that you load DOS into a drive before you enter the command (using a two-floppy disk drive system). It is important to remember that formatting destroys any previously entered data on the diskette or hard disk. Be certain that you do not want to use the data on the diskette if you are reformatting a diskette.

TIP: Use the DIR command to check the contents of the diskette before you reformat a diskette so that you can be certain that this is the diskette you want to format.

CAUTION: If you are using a computer with a hard disk drive, *DO NOT* try the instructions on formatting hard drives or you will lose all the data on the hard disk drive through this process.

Study the following examples of how the basic Format command is used:

A>format b:

This command formats the diskette in drive B. For protection, you should always indicate the drive in this command. If you do not type the drive, the Format command will format the diskette in drive A. If this happens, all instructions on the DOS diskette in drive A will be erased using a two-floppy drive system.

The following message appears:

Insert new diskette for drive B:

and strike ENTER when ready.

After you insert the new diskette and press Enter, the message Formatting. . . (depending on the version of DOS you are using, you may see a different message) appears. Once the formatting process is complete, the message Format Complete appears. The question Format Another (Y/N)? is asked. If you want to format another diskette, enter Y; If not, press N for no.

C>format a:

This command from the hard disk drive formats the diskette in drive A. Caution: If you do not specify the drive when giving this command,

you would wipe out all the information stored on your hard disk.

Now that you have studied the Format command, format your blank diskette using the following steps:

1 Remove your Data diskette from drive B (or drive A if using a hard drive).

2 Insert your unformatted (blank) diskette into drive B (or drive A if using a hard drive).

3 On a floppy disk drive system, DOS must be in drive A (the default drive). Your system prompt A> should be displayed.

Type: format b: (Press Enter)

Wait for the message to appear. Go to step 5 to continue your formatting process.

4 On a hard disk drive system, DOS has already been installed.

a. Change your system prompt A> to C>.

b. Caution: Be certain to indicate drive A in your Format command.

c. Type: format a: (Press Enter)

Wait for the message to appear. Go to step 5 to continue your formatting process.

5 Your unformatted blank diskette should be in the appropriate drive; press Enter to begin the process.

CAUTION: If you keep the Data diskette in the drive, the Format command will erase all data on this diskette.

6 Type: n (You do not need to format another diskette at this time.)

Your system prompt A> (or prompt C> if using a hard disk drive system) should be displayed.

7 Remove the formatted diskette and replace it with your Data diskette.

8 Label the formatted diskette (with a felt-tip pen) as FORMATTED.

9 Save this diskette for use later in this chapter.

TIP: When you purchase a new box of diskettes, format them all at one time so that you will have prepared diskettes for storing information when you need them. Formatting all the diskettes at one time enables you to avoid exiting a system or aborting a command to prepare the diskettes.

Format Options

A>format b:/s	This command formats the diskette in drive B and also copies the files needed from the operating system. The commands that are necessary for DOS to operate will allow you to boot the computer and use the internal commands but will not include the external commands, such as FORMAT. To use this command, you must decide whether you will be using the diskette to boot your computer.
A>format b:/v	This command formats the diskette with an identifying volume label. You will learn more about this label in Chapter 6.
A>format b:/s/v	Combines the above.

Copy (COPY) Command

The internal **Copy command** is perhaps the most frequently used DOS command. This command makes an exact copy of a file or a number of files to be placed on the same diskette or hard disk under a different file name or placed on a different diskette.

You can use this command to bring a back-up copy of the disk up to date, to make a second copy of the existing file to edit or make changes yet keep the original unchanged, or to copy a file to the printer to produce a hard copy. All these uses of the Copy command save time. Here is an example of a Copy command:

```
A>copy test1 testA
```

Your screen will show this:

```
A>copy test1 testA
1 file(s) copied
A>
```

In this command, TEST1 is the **source file** (name of the file to be copied) and TESTA is the **target file** (name of the copy to be made). Because these two files will be stored on the same disk, TESTA had to be given a different name to distinguish it from TEST1. You cannot have two files with the same name on

the same disk. You can, however, have the same file name if the file is stored on another diskette. A message will indicate a file has been copied.

Study the following examples for some common uses of the Copy command:

A>copy b:memo	This command copies the file MEMO from drive B to the current directory on the diskette in drive A and is given the same file name.
A>copy *.* b:	This command copies all the files in the current directory—drive A to the diskette in drive B.
A>copy memo b:	This command copies the file MEMO from drive A to the diskette in drive B and is given the same file name.
C>copy memo a:	This command copies the file MEMO from drive C to the diskette in drive A and is given the same file name.

To copy a file on the same diskette, complete these four steps:

1. Be certain the system prompt B> (or prompt A> if using a hard disk drive system) is displayed.
2. Be certain your *Data* diskette is inserted into drive B (or drive A if using a hard disk drive system).
3. Type: copy credit creditA (Press Enter)
4. To verify that the command was executed, type: dir credit* (Press Enter)

   The files CREDIT and CREDITA should be displayed.

Diskcopy (DISKCOPY) Command

It is much faster in some cases to make a copy of a diskette by copying the entire diskette rather than copying each file separately. The **Diskcopy command** helps you quickly prepare a back-up copy of all files on your diskette—again, functioning as a time-saving command. This DOS command helps you to maintain a back-up copy of each new software program you obtain. After you make a diskcopy or back-up copy, store the original, and use the back-up for daily use. If anything happens to your back-up, you still have your original to make a copy.

This external command copies the exact duplicate of the contents in the source drive (diskette to be copied from) to the diskette in the target drive (diskette to be copied to). If the diskette in the target drive has not been formatted, it will be formatted during the Diskcopy process (using IBM's version of DOS). The difference between the Diskcopy and Copy commands is that Diskcopy copies entire diskettes whereas Copy copies individual files.

CAUTION: Do not use Diskcopy to copy a hard disk or to copy an entire diskette to a hard drive. Diskcopy is used to create a duplicate or copy of an entire diskette but not to transfer files from a diskette to a hard disk.

Study the following example to see how the Diskcopy command works when working with a computer system that has two floppy disk drives:

A>diskcopy a: b:

This command copies the contents of a diskette to be placed into drive A to a diskette to be placed into drive B. After you press the Enter key, the following message appears:

Insert source diskette in drive A:

Insert target diskette in drive B:

Strike any key when ready...

After the process is completed, the following prompt will appear:

Copy another (Y/N)?

If N is entered, then the command ends. If Y is pressed, the next copy will be done again, with the message prompting you to insert source and target diskettes.

To practice the Diskcopy command (using a two floppy disk drive system), complete the following steps:

1. The system prompt A> should be displayed.
2. With DOS in drive A, type: diskcopy a: b: (Press Enter)

   Your screen will display:

   Insert source diskette in drive A:

   Insert target diskette in drive B:

   Strike any key when ready...
3. Insert the *source* disk (your *Data* diskette) into drive A.
4. Insert the *target* disk (your *formatted* diskette) into drive B. If you had not formatted the diskette, DOS would format the diskette at this time.

5 Press any key to begin the process. After the diskette has been copied, you will be asked if you wish to copy another diskette.

6 Type: n (You will not copy another diskette at this time.)

7 Remove the new copy (target) of your Data diskette from drive B. Relabel this diskette as *copy*:

8 Insert your original Data diskette into drive B (or drive A if using a hard disk drive system).

9 Reinsert the DOS diskette into drive A.

To practice the Diskcopy command (using a hard disk with one floppy disk drive), complete the following steps:

1 The system prompt A> should be displayed.

2 Type: diskcopy (Press Enter)

Your screen will display this message:

Insert source diskette in drive A:

Press any key when ready...

The source diskette is the original or diskette you want to copy.

The following message appears:

Copying xxtracks

9 Sectors/track, 2 side(s)

3 Insert the source diskette (your Data diskette) into drive A and press any key.

After pressing any key, your screen will display:

Insert target diskette in drive A:

Press any key when ready...

4 Remove the source diskette from drive A and replace it with the target disk (your formatted diskette) and press any key. If you have not formatted the disk previously, DOS would format it at this time.

After the disk has been copied, you will be asked if you wish to copy another disk.

5 Type: N (You will not copy another disk at this time).

6 Remove the new copy (target) from drive A. Relabel this diskette as *copy*.

7 Insert your original Data diskette into drive A.

Delete (DEL) Command

As the number of files on your diskette or hard disk increases , you may have to delete or erase certain files that are no longer needed to make room for additional files. For instance, some software programs automatically make a back-up copy of each file, and these back-up copies take up much disk space. Once your final document is the way you want it to be, you can delete all the back-up copies of the files. For a floppy disk system, you can make a copy of the entire diskette to save as your back-up diskette in case anything happens to the original diskette.

As your files become out of date, you can delete them and any back-up copies to leave ample space on your diskette for additional work or enough space to edit your current files. The internal **Delete command** deletes a specified file or group of files from a diskette or hard disk drive system.

CAUTION: If you use the wildcards (* and ?), verify your screen before you press Enter to execute the command. Be certain that you want to delete or erase the file or files specified.

TIP: The Erase command can be used to delete files; however, in this text DEL is used in the place of ERASE.

Study the following examples of deleting a file using a hard disk—the default drive is C.

C>del report.88	This command deletes the file named REPORT.88.
C>del *.opm	This command deletes all files with an extension OPM in drive C.
C>del a:report.89	This command deletes the file REPORT.89 from drive A.

To execute the DEL command, follow these four steps:

1. For a floppy disk drive system, change the system prompt to B>.
2. For a hard disk drive system, the system prompt A> should be displayed.
3. Type: del creditA (Press Enter)
4. Type: dir creditA (Press Enter)

A message should indicate that the file was not found because it has been deleted.

Rename (REN) Command

It is often helpful to rename files on your diskette or hard disk. For example, you may want to rename an old version of a file to a new version to better identify your file. The internal **Rename** (REN) **command** changes the name of the file specified in the first name to the file in the second name. This is how the REN command would be entered:

A>ren b:memo1 memo2	This command renames the file MEMO1 to MEMO2 on the diskette in drive B.
B>ren memo1 memo2	This command renames the file MEMO1 to MEMO2 on the diskette in drive B.
A>ren b:memo1 *.opm	This command renames the file MEMO1 on the diskette in drive B to MEMO1.OPM.

TIP: | To see if the file has been renamed, list the directory using the DIR command.

To practice the REN command, complete these five steps:

1. Display the system prompt B> (or prompt A> if using a hard disk drive system).
2. Type: ren edit editing (Press Enter)
3. Type: dir editing (Press Enter)
   The new file name EDITING should be listed.
4. Type: ren orgmtg orgmtg.ofc (Press Enter)
5. Type: dir orgmtg.ofc (Press Enter)
   The new file name ORGMTG.OFC should be listed.

Type (TYPE) Command

The internal Type command displays the contents of a file on the screen. If the file is an ASCII text file, you will be able to see and understand the entire contents of the file as it is stored. (ASCII is an acronym for American Standard Code for Information Interchange.) If the file is not in ASCII text format, for example a program or a WordPerfect file, you may see only a portion of the file and all parts of it may not be understandable because of special characters that may be in the file.

To practice the Type command, complete these steps.

1. Display the system prompt B> (or prompt A> if using a hard disk drive system).
2. Type: type cursor (Press Enter)

   A portion of the file CURSOR will be displayed.

TIP: If you do not type the file name exactly as it is shown in the directory, the following message will be displayed: File not found.

Summary

The **DIR command** tells us file names, extensions, the size of the files in bytes, date and time when files were created and/or revised, number of files on a disk, and how much space is left on the disk for future use.

The **question mark** is a wildcard that represents or substitutes for a single character in a file name.

The **asterisk** is a wildcard that represents or substitutes for a group of characters.

The **DIR/W command** displays file names and extensions only in a wide format, in several columns across the screen.

The **DIR/P command** displays the directory and pauses between screen pages.

To list a specific file entry in a directory, use the DIR command with the specific file name.

The **FORMAT** command prepares a new blank diskette or hard disk. The FORMAT command will erase all information already stored on a diskette or hard disk drive system. Use this command with caution.

The **COPY** command makes an exact copy of a file or a number of files to be placed on the same diskette or hard disk drive system or placed on a different diskette. The **source file** is the name of the file to be copied; the **target file** is the name of the copy to be made.

The **DISKCOPY command** copies the entire diskette. This command cannot be used to copy hard disks.

The **DELETE command** erases a file or a number of files. The Erase command is interchangeable with DEL.

The **TYPE** command displays the contents of a file.

The **RENAME command** renames files.

Applications

Complete Chapter 5 Exercises in Appendix C before moving to Chapter 6.

6

Additional DOS Commands

You have learned the essential DOS commands for operating the computer effectively. This chapter emphasizes additional commands that will help you learn more about how DOS operates.

You will learn how to clear the screen, check the diskette for a status report, compare a copy of a diskette with its original, print what is on the screen, give the diskette a label, and check the DOS version. There are many other DOS commands to learn; some of these commands are used more frequently by programmers, and some commands are needed for advanced DOS operations. If you learn the essential and additional commands, you will be able to operate your computer very effectively. As you gain experience working with DOS, you may want to learn more about other DOS commands.

Clear Screen (CLS) Command

Sometimes your screen becomes filled with entries as you are working with DOS. You can clear any distracting entries on your screen with the internal Clear Screen **(CLS) command**. This command clears only the contents on the screen at the time; it does not affect memory or disk storage. After the screen is cleared, the system prompt appears in the upper left corner. The following command (entered at the system prompt) clears the screen:

```
A>cls
```

To clear your screen, use these steps:

1. Boot your system if you have not done so.
2. Insert your Data diskette into drive B (or drive A if using a hard disk drive system).
3. List the directory for drive B (or drive A if using a hard disk drive system).

   The directory for drive B (or drive A for a hard disk drive system) should be displayed. If not, enter the DIR command again.
4. Type: cls (Press Enter).

   The screen should be cleared, and the system prompt for drive B (or drive A) should appear in the upper left corner.

Checkdisk (CHKDSK) Command

You can check the condition of your disk by using the external Checkdisk command. Although some types of errors occur infrequently or even rarely,

malfunctions do occur and can create errors in the disk directory. You can be certain if files are being recorded properly by using the Checkdisk command.

The **CHKDSK command** analyzes the number of files and directories on the designated drive and compares the directory entries with the locations and lengths of the files (from the file allocation table [FAT]). The command also indicates whether a diskette is bootable and produces a disk and memory status report.

CAUTION: Be certain the DOS disk is in the drive before you enter this command because DOS does not wait for you to insert a disk before starting its checking.

Because CHKDSK is an external command, DOS must be loaded in the drive before the command is given. The following command

```
A>chkdsk
```

will produce a status report on the diskette in drive A.

The following command

```
A>chkdsk b:
```

asks DOS to check the diskette in drive B and will produce a status report on this diskette.

Using a hard disk drive system, the following command

```
C:\>chkdsk
```

will check the current hard disk drive (C>). However, the command

```
C:\>chkdsk a:
```

will check the diskette in drive A.

As a reminder, If you omit the drive in the command, DOS checks the current drive. In other words, if the following command

```
A>chkdsk
```

is entered, then drive A diskette will be checked.

After checking the diskette or hard disk drive system, DOS displays any error messages, followed by a status report. Appendix B lists some error messages. A complete listing of error messages is listed in the DOS reference manual. The status report includes the following four items:

```
A:\>chkdsk

    362496  bytes  total disk space
     47104  bytes  in 34 user files
    315392  bytes  available on disk

    589824  bytes  total memory
    480592  bytes  free

A:\>
```

Figure 6-1 Report given by a CHKDSK command.

1. Total amount of space on the disk
2. Number of files and directories and how much space they use
3. Amount of space remaining on the disk for additional files
4. Byte size of the computer's memory and the number of bytes remaining for future use

Figure 6-1 is an example of a report given by a CHKDSK command.

Hidden files may appear on your status report. **Hidden files** are the working parts of DOS and do not show on the directory. **User files** are the files that you, the user, have access to display and manipulate. Notice that the difference between total memory and the total free memory is the amount of memory DOS needs to run its functions.

To execute the CHKDSK command, complete the following steps:

1. Display the system prompt A>.
2. For a floppy disk drive system, type: chkdsk b: (Press Enter)

   A status report of the diskette in drive B should be displayed.
3. For a hard disk drive system, type: chkdsk (Press Enter)

   A status report of the Data diskette in drive A should be displayed.

NOTE: Should there be a report of flawed files, refer to Appendix B. Ask for assistance from your instructor.

Diskcompare (DISKCOMP) Command

Why would you want to compare diskettes? Suppose you have copied a diskette using the DOS command (DISKCOPY) and want to compare the contents on the copy with the contents on the original diskette to see if they are identical. To compare diskettes, use the external **Diskcomp command.**

Follow these steps to compare two diskettes using a two-floppy disk drive system. You can also follow these instructions if your hard disk system has two floppy disk drives:

1. Display the system prompt A> for floppy disk drive system or C> for hard disk drive system.
2. Type: diskcomp a: b: (Press Enter)
3. The message on the screen reads:

   Insert first diskette in drive A:

   Insert second diskette in drive B:

   Strike any key . . .
4. Remove the DOS diskette from drive A.
5. Insert the first diskette (the Data Diskette) into drive A and the second diskette (your diskette you marked "copy") into drive B.
6. Press Enter or any key when ready.

   During this process, all tracks will be compared and any error messages will appear. When the process is completed, you will be asked if you want to compare other diskettes.
7. Type: N for no. The system prompt appears again.

   If you press Y, repeat steps 3, 4, and 5.
8. Remove the Data diskette from drive A and replace it with DOS.
9. Remove the diskette marked Copy and replace it with your original Data diskette.

Printing the Screen Command

It is sometimes very useful to print what is displayed on the screen. On most microcomputers, you can print what is on the screen by simply holding down

either of the Shift keys and pressing the PrtSc (Print Screen) key. The information displayed on your screen will print without interruption at the printer.

Practice the **Shift/PrtSc command** by completing these five steps:

1. Be certain that your printer is attached and turned on.
2. Display the system prompt B> (or prompt A> if using a hard disk drive system).
3. Type: cls (Press Enter to clear the screen.)
4. Type: dir/w (Press Enter)
5. Hold down the Shift key while you press PrtSc.

The directory in its wide format should be printed.

TIP: Pressing Ctrl and PrtSc will print everything as it is displayed on the screen. The difference between Shift/PrtSc and Ctrl/PrtSc is Shift/PrtSc will print only what is displayed on the screen, Ctrl/PrtSc will print everything that is scrolled on the screen. Ctrl/PrtSc must be entered *before* the DIR command is given.

Version (VER) Command

If you do not know the DOS version number (for example, Release 2.0, 3.0, 3.1, 3.2, and so on), you can check it by using the internal **VER command**. Follow this step to display the DOS version number being used.

1. At the system prompt A> (or prompt C> if using a hard disk drive system), type: ver (Press Enter).

A message appears similar to the one shown here:

IBM Personal Computer DOS Version 3.3

NOTE: Version numbers will vary.

Volume (VOL) Command

The Volume **(VOL) command** is used to display the volume label of a diskette or disk of the specified drive. As you build your supply of diskettes, you may soon find yourself having to read through the directories of your diskettes to see that you are using the correct diskette that contains the file you need. Reading through your directories to determine which diskette you need can be very time consuming.

```
A:\>dir /w

 Volume in drive A is datadisk
 Directory of A:\

BUDGET    OFC  COLUMNS        CURSOR          ENCHANT        CREDIT
EDIT           ERRORS         LIBRARY  REF    ORGMTG         PROJECT
RHINEWAY       ROGERS         SPACING        LIBRARY        LONGHORN
RETURNS        SUBSCRIB       TABS           RECORDKE       CALENDAR  SVM
```

Figure 6-2 Volume label.

If you format your diskette or hard disk with a volume label (for identification), it will be much faster to use the internal VOL command to check that you are using the correct diskettes. For example, if the diskette in drive B has a volume label of MYDATA and you typed the following command

```
A>vol b:
```

the system would display this message:

```
Volume in drive B is MYDATA
```

However, if the diskette does not have a volume label, the following message will appear:

```
Volume in drive B has no label
```

Figure 6-2 shows the volume label as it may appear in a partial directory.

TIP: If a nonexistent drive is specified with the Volume command (for example, d:), the following error message will appear:

```
Invalid drive specification
```

Read the Volume label on your Data diskette by using this step:

1. At the system prompt B> (or prompt A> if using a hard disk drive system), type: vol (Press Enter).

Because a label has not been assigned for your Data diskette, the following message appears:

```
Volume in drive B has no label
```

If you are using a hard disk system, drive A will be indicated.

Complete the following step to check the label in drive A or drive C:

1. At the system prompt A> (or C>), type: vol (Press Enter).

Because you are using different DOS systems, your drive A (or drive C>) may or may not show a label.

Volume Label (LABEL) Command

In DOS versions beginning with 3.0, the **LABEL command** was offered. The external Label command is used to create, change, or delete a volume label on a diskette or hard disk drive system. The label can consist of one to eleven characters (alpha letters, upper- and lowercase, numbers 0 through 9, and the symbols !, @, #, $, ^, &, (), -, {}, ', _ , ~) and can include a space.

NOTE: Version 3.0 lets you change the volume label on a floppy or hard disk drive system with the LABEL command. Under DOS 2.0, you could supply a label only while formatting a diskette and could not change it later without reformatting.

CAUTION: Do not use the Label command with networked drives.

To create a volume label with any version of MS DOS *beginning with* 3.0, complete these steps:

1. Display the system prompt B> (A> if using a hard disk drive system).
2. Type: label (Press Enter)

   This message will appear:

   Volume in drive A has no label

   Volume label (11 characters, ENTER for none)?
3. Type: mydata (Press Enter)
4. Type: label (Press Enter)

   The following message will appear:

   Volume in drive A is MYDATA

   Volume label (11 characters, ENTER for none)?
5. Press Enter
6. A message appears:

   Delete current volume label (Y/N)?
7. Type N for no (Press Enter)

To change a volume label, follow these three steps:

1. At the system prompt B> (or prompt A> if using a hard disk drive system), type: label (Press Enter)

   The following message will appear:

Volume in drive A is MYDATA

Volume label (11 characters, ENTER for none)?

2 Type: mydisk

3 Press Enter.

If you already know what label you want to use, complete these four steps:

1 Type: label mydisk (Press Enter)

Now you can verify if your data diskette has a label.

2 Type: label (Press Enter)

3 Press Enter (to select None)

4 Type: n (for no) Press Enter

TIPS:

1. The internal VOL command lets you *display* the volume label.
2. The external LABEL command lets you *change* the volume label.
3. The DIR command lets you *see* the volume label.

Date Command

You are asked to respond to the date unless there is an internal clock. The internal **Date command** displays the current system date and then asks you to either verify the current date or enter the corrected date. Figure 6-3 shows the Date command message.

To display the date, use the following steps:

1 Display the system prompt B> (or prompt A> if using a hard disk drive system).

2 Type: date (Press Enter)

The current date will appear.

3 If the date is correct, press Enter.

4 If the date is incorrect, type the current date, and then press Enter.

```
Current date is Tue  7-13-88
Enter new date (mm-dd-yy): __
```

Figure 6-3 Date command message.

Time Command

The internal **Time command** displays the current time and then asks you to verify the current time or enter a new time. Figure 6-4 shows the Time message.

```
Current time is 11:14:24.43
Enter new time: _
```

Figure 6-4 Time message.

When you learned how to boot the system in Chapter 3, you found that DOS uses a twenty-four hour (military) clock. In other words, the computer reads 1:20 P.M. as 13:20.

To execute the Time command, complete the following steps:

1. Display the system prompt B> (or prompt A> if using a hard disk drive system).
2. Type: time (Press Enter)
3. If the time is correct, press Enter.
4. If the time is incorrect, enter the correct time and press Enter.

Summary

The **CLS command** clears the screen.

The **CHKDSK command** analyzes the number of files and directories on the designated drive and compares the directory entries with the locations and lengths of the files. It also indicates if there are any errors on the diskette or hard disk and produces a disk and memory status report.

The **DISKCOMP command** compares the contents of one diskette with the contents of another diskette to see if they are identical.

The **Shift/Prtsc** command prints what is displayed on the screen.

The **VER command** displays the DOS version being used.

The **VOL command** displays the volume label of a diskette or hard disk drive system.

The **LABEL command** (MS DOS versions beginning with 3.0) creates, changes, or deletes a volume label.

The **Date** and **Time commands** display the current system date and time, and then ask you to either verify the current date/time or enter the correct date/time.

Applications

Complete Chapter 6 Exercises in Appendix C before moving to Chapter 7.

7

Root Directory and Subdirectories

In Chapters 4 to 6, you referred to the diskette directory. A directory describes a group of related files. Each directory entry is described in terms of file names, extensions, length of the file according to bytes, and date and time the file was created.

Up to this point, you have been using a diskette that contained only one directory. Actually, any diskette or hard disk drive system can have more than one directory although it is recommended that you use a hard disk drive system for additional directories. Remember that during the formatting process, one directory called the root is automatically created.

You must have an understanding of the directory structure and additional DOS commands to create additional directories. In this chapter you will learn how directories are organized and how to create, change, remove, and display directories.

Terminology

Before you begin learning about directories, study the following definitions:

The **root directory** is the main directory on a diskette or hard disk drive system that DOS creates during the formatting process. The root directory is represented by the backslash (\). When you boot the computer with DOS, you are in the root directory.

A **subdirectory** is a file that contains directory entries, that is, a directory within a directory. You create, use, and manipulate subdirectories by using additional DOS commands, such as \Benefits. The terms directory and subdirectory are often used interchangeably.

A **directory entry** can be a file or subdirectory. The number of entries that a root directory can contain depends on the type of diskette or hard disk drive system.

The root directory of a double-sided 320/360K and 720K diskette can hold 112 entries. The root directory of a high-capacity 1.2M (megabyte) diskette can hold 224 entries, and a root directory of a hard disk drive system can hold 512 entries. A subdirectory can contain any number of entries; it is limited only by its disk space.

Current drive is the one that DOS assumes unless specified otherwise by another command. Let's say that you want a function to be performed on drive B and you are now using drive A. If you do not specify drive B in your command, DOS will assume drive A is the current drive.

Current directory is the directory DOS assumes unless you specify differently. DOS follows the same concept with the current directory as it does with the current drive.

A **path** is the sequence of subdirectory names leading to a file or directory.

A **path name** is the name defining the path to the subdirectory and is preceded by a backslash (\). DOS can only find a file in a subdirectory by following its path name, for example, \Benefits\Claim.

Why Use Directories?

Suppose you put all your correspondence files into a big box. As you need a particular document, you have to go through the box to find the particular file. The bigger the box, the longer it takes you to find a file. The same is true with your diskette or hard disk drive system.

Your diskette or hard disk can contain a large number of files. Just as it takes you longer to find a file in your paper box, it takes DOS longer to find a specific file. You can save time if you organize your computer files in related groups in directories. (Of course, the same would be true if you organized your files in your box system.)

How Subdirectories Are Organized

To help you understand how subdirectories are organized, assume that three areas in a personnel department are organized as shown in Figure 7-1. This structure is referred to as a **tree-structured system** because it resembles the structure of a tree with its root (main directory) and all the branches (subdirectories). As you can see, this directory system actually represents an inverted tree-structured system.

In Figure 7-1 there are different levels within Personnel. Your hard disk drive directory system can be organized in this same manner. The highest

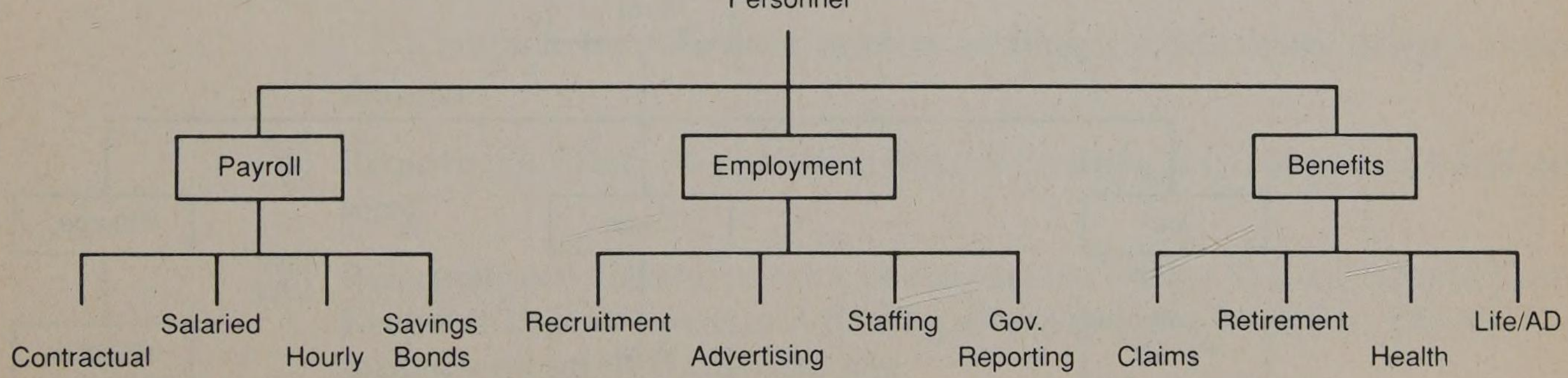


Figure 7-1 Tree-structured system.

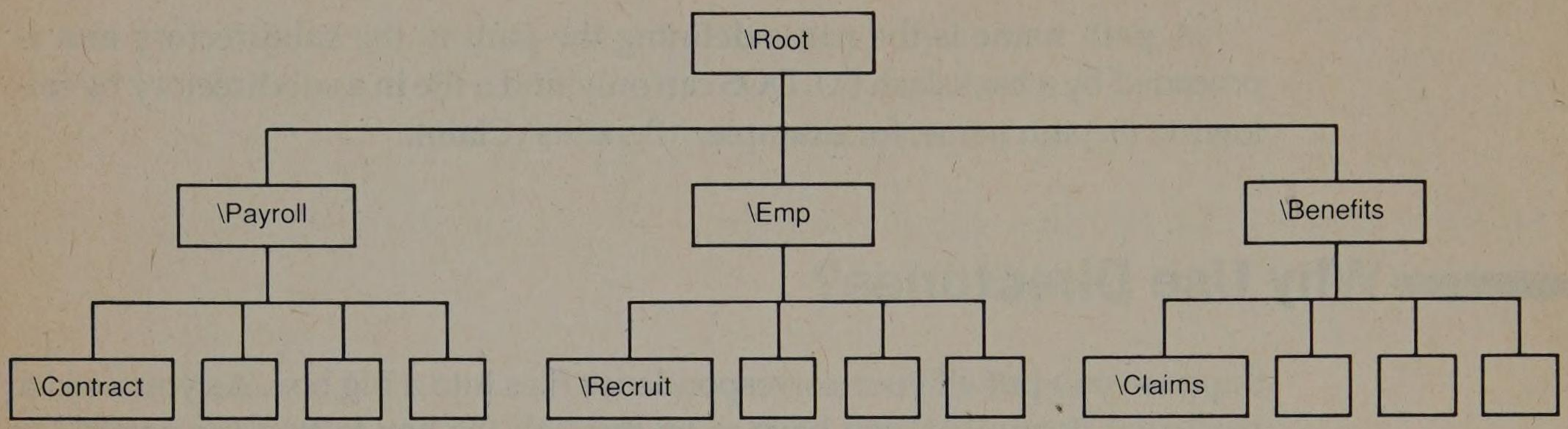


Figure 7-2 Labeling directories.

level is the root directory (Personnel); the next level below the root directory represents subdirectories (Payroll, Employment, and Benefits). The next level below these three subdirectories includes specialized subdirectories; for example, in Payroll, additional subdirectories include Contractual, Salaried, Hourly, and Savings Bonds.

Figure 7-2 shows how these directories may be labeled in your computer file. As you can see, some of the subdirectory names have been abbreviated because these names must follow the same format as file names.

TIP: File names can consist of one to eight characters followed by an optional extension of a period and one to three characters.

Another way to organize your files is to have a subdirectory for the person responsible for the area, as Figure 7-3 illustrates. In this structure, a subdirectory has been created for each person responsible for each specialized area.

It is important to remember that organizing your computer files using the tree-structured system helps you maximize efficiency. However, do not get

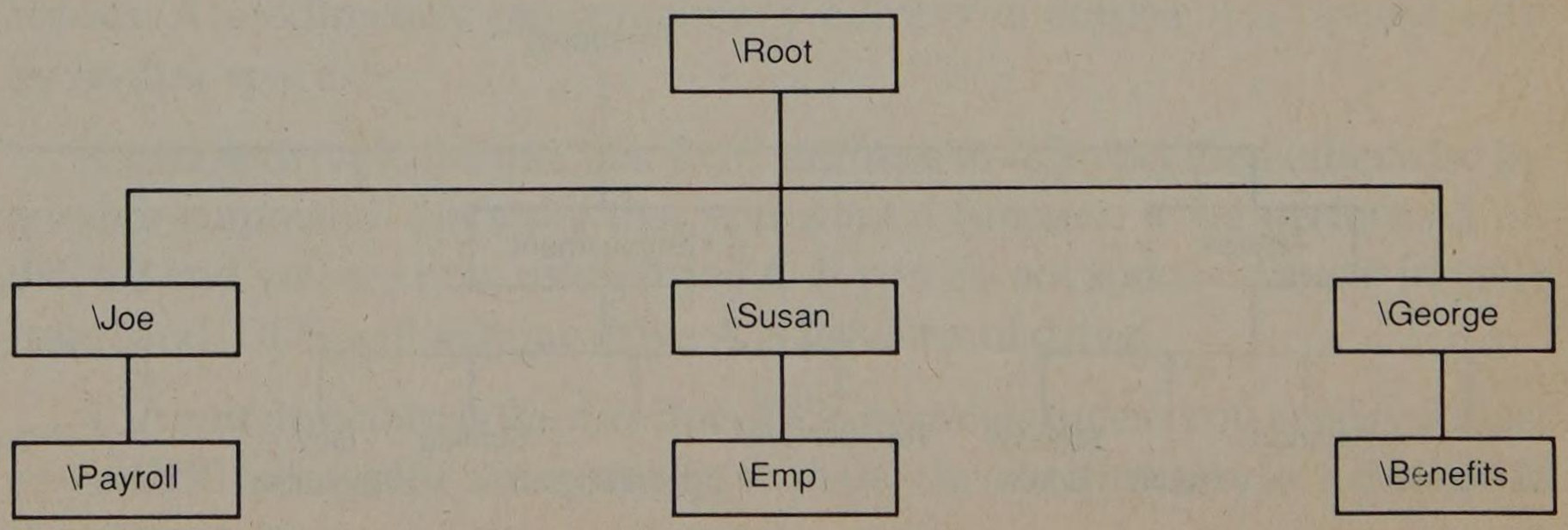


Figure 7-3 Subdirectory for specialized areas.

carried away with your organization to the point that you have structured a complex system. If you organize a complex system, both you and DOS have to work harder to keep track of your directories, which will increase the response time when you save and retrieve files.

Directory Commands

Following are the directory commands you must know so you can make or create a directory and manage your directories:

MD	MKDIR (earlier DOS version) Make a Directory
RD	RMDIR (earlier DOS version) Remove a Directory
CD	CHDIR (earlier DOS version) Change a Directory
TREE	Displays an entire directory file structure system

Make a Directory (MD)

The internal MD command is used to make a subdirectory on your hard disk system to help you organize your files. In other words, before you create your files, you need to create a space in which to put a group of related files. Study these three important points before you make a directory:

1. Subdirectory names can have no extensions.
2. Subdirectory paths cannot have more than sixty-three characters, including backslashes (\).
3. The error message Unable to create directory appears on the screen if the directory already exists, if the disk is full, or if the path name designated is nonexistent.

Complete the following steps in creating a subdirectory using a floppy diskette:

1 Remove your Data diskette from drive B (or drive A if using a hard disk system).

2 Reformat your diskette (the one you copied in Chapter 5) that is labeled Copy. Keep it in drive B (or drive A if using a hard disk drive system). DO NOT reformat your original Data diskette.

3 Be certain the screen shows the system prompt B> (or prompt A> if using a hard disk drive system). By now, your diskette labeled Copy should be in drive B (or drive A if using a hard disk drive).

4 Type: md payroll (Press Enter)

5 Type: md emp (Press Enter) (emp represents employment)

6 Type: md benefits (Press Enter)

7 Type: dir (Press Enter)

You can verify if the subdirectories have been created by using DIR command. DOS shows three directories named PAYROLL, EMP, and BENEFITS created under the root directory. The <DIR> indicates that PAYROLL, EMP, AND BENEFITS are directories rather than files.

```
Volume in drive B has no label
Directory of B:\

PAYROLL         <DIR>   9-12-88    7:15p
EMP             <DIR>   9-12-88    7:15p
BENEFITS        <DIR>   9-12-88    7:15p
              3 File(s)     359424 bytes free
B:\>
```

Let's suppose you wanted to add an additional subdirectory within each of these three directories. Complete the following steps:

1 Type: md \payroll\contract (Press Enter)

TIP: If the screen displayed an INVALID message, check to see that you used the backslash (\) rather than the forward slash (/).

2 Type: md \emp\recruit (Press Enter)

3 Type: md\benefits\claims (Press Enter)

4 Type: dir (Press Enter)

Your screen should show this information:

```
Volume in drive B has no label
Directory of B:\

PAYROLL         <DIR>   9-12-88    7:15p
EMP             <DIR>   9-12-88    7:15p
BENEFITS        <DIR>   9-12-88    7:15p
            3 File(s)    356352 bytes free
B:\>
```

Notice that the only part of the information that has changed is the bytes free. As you see, bytes have been used because the additional subdirectories have been created. However, these additional subdirectories are not listed here.

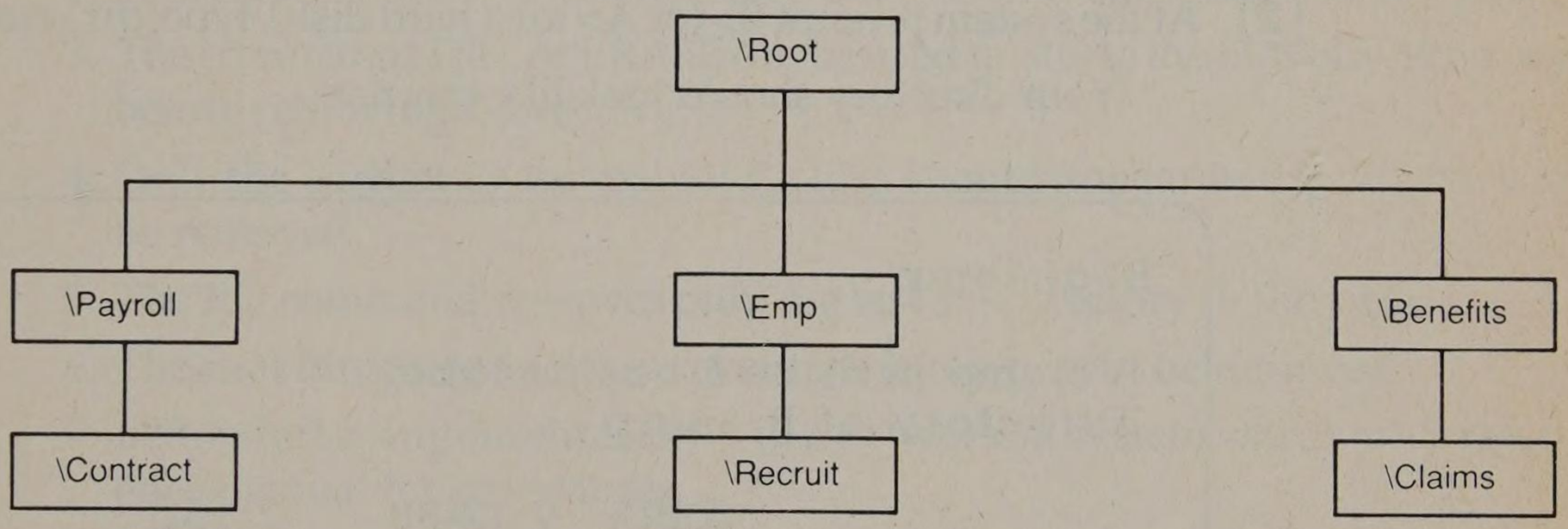


Figure 7-4 Directory structure.

Now your directory structure should look like the one shown in Figure 7-4.

Now let's see what your directory looks like at this point since you have made new subdirectories.

1 Display the system prompt B> (or A> for a hard disk) and type: dir\payroll (Press Enter)

Your screen should look like this:

```
B>dir\payroll

 Volume in drive B has no label
 Directory of B:\payroll

.                <DIR>   9-12-88     7:15p
..               <DIR>   9-12-88     7:15p
CONTRACT         <DIR>   9-12-88     7:16p
               3 File(s)    356352 bytes free
B>
```

TIP: In each directory listing the period (.) and two periods (..) represent hidden data (or system) files. If these two files were to be erased, you would not be able to find any of the other files in the directory.

If your screen does not look like this, clear your screen; then, check to see if you have a name misspelled or if you used the forward slash (/) instead of the backslash (\). Give the command again.

2 At the system prompt B> (or A> for a hard disk), type: dir\emp (Press Enter).

Your directory should look like this one:

```
B>dir\emp

 Volume in drive B has no label
 Directory of B:\emp

.                <DIR>   9-12-88     7:15p
..               <DIR>   9-12-88     7:15p
RECRUIT          <DIR>   9-12-88     7:17p
               3 File(s)    356352 bytes free
B>
```

3 Display the system prompt B> (or A> for a hard disk) and type: dir\benefits (Press Enter).

Your screen should look like this:

```
B>dir\benefits

 Volume in drive B has no label
 Directory of B:\benefits

.                <DIR>   9-12-88      7:15p
..               <DIR>   9-12-88      7:15p
CLAIMS           <DIR>   9-12-88      7:18p
                3 File(s)     356352 bytes free
B>
```

Remove a Directory (RD)

The internal **RD** command removes a subdirectory from the designated diskette or hard disk drive system. Before you remove a subdirectory, study the following nine important points:

1. The commands DEL or ERASE cannot be used to remove a subdirectory.
2. You cannot remove a subdirectory without first emptying the directory.
3. The commands DEL or ERASE can be used to delete the files of a directory before removing a directory.
4. Only the current (.) and parent (..) files should appear in the directory to be removed.
5. The RD command removes only the last subdirectory in the path.
6. The root directory and the current directory cannot be removed.
7. Before removing subdirectories in a networked system, check your reference manual for procedures.
8. The following message appears on your screen if you specify an invalid directory in the path, if the subdirectory has existing files, or if you misspell the path or directory name:

   ```
   Invalid path, no directory or directory not empty
   ```

9. Only one directory can be removed at a time.

Let's remove the subdirectory named CONTRACT from PAYROLL. Use the following steps to remove a subdirectory:

1 At the system prompt B> (or prompt A> if using a hard disk drive system), type: rd \payroll\contract (Press Enter).

CONTRACT should be removed from PAYROLL.

2 To verify that subdirectory CONTRACT has been removed, type:

dir\payroll (Press Enter)

CAUTION: Remember that if you have files stored in a directory to be deleted, you have to copy the files from the directory to be removed to another directory or delete the files before you can remove the directory. You can only remove empty directories.

Change a Directory (CD)

Use the internal CD command to change the current directory to another directory and to show the name of the current directory. Before you change the directory, study these four important points:

1. A subdirectory must exist before you change it to the current directory.
2. Enter the full directory path name when you change directories, or you may not find the one you want.
3. The following screen message appears if the path you enter does not exist:

   Invalid directory

   When this message appears, DOS remains in the current directory.
4. The longest path that you can specify with CD command is sixty-three characters.

Complete these eight steps to change a subdirectory:

1. Type: cd payroll (Press Enter)
2. Type: cd \ (Press Enter)

   This command returns you to the root directory.
3. Type: cd emp (Press Enter)

   Now you should be in the subdirectory EMP.
4. Type: cd \payroll (Press Enter)

   This command moves you back to the PAYROLL directory.
5. Type: cd \ (Press Enter)
6. Type: cd benefits (Press Enter)
7. Type: cd claims (Press Enter)

   You should be in the subdirectory BENEFITS\CLAIMS.
8. Type: cd \ (Press Enter)

Now you should be in the root directory.

Displaying the Directory Structure

As you have just learned, you can change from one subdirectory to another by using the CD command. If you are not familiar with a directory structure, you can display it by using the external **TREE** command, which displays the paths in the directory structure on the specified drive and optionally lists the files in each directory.

Study the following important points before you use the TREE command:

1. If you want to list the files in each directory, you must use the /F command. Use this command: tree a: /F.
2. If you do not specify a drive name, TREE will list the structure of the default directory.
3. These messages may appear:
   a. Invalid drive specification appears when you designate a nonexistent drive in the TREE command.
   b. Invalid path appears when TREE finds something wrong in the directory file.
   c. No-subdirectories exist occurs when you have no subdirectories to list using the TREE command.

Now let's list the directory structure:

1 For a floppy disk drive system, at the system prompt A>, type:

```
tree b:
```

2 For a hard disk drive system, at the system prompt C>, type:

```
tree a:
```

Your directory should look like this one:

```
A>tree b:
DIRECTORY PATH LISTING
Path: \PAYROLL
Sub-directories:  None
Path: \EMP
Sub-directories:  RECRUIT
Path: \EMP\RECRUIT
```

Sub-directories: None

Path: \BENEFITS

Sub-directories: CLAIMS

Path: \BENEFITS\CLAIMS

Sub-directories: None

Summary

A **directory** describes a group of related files.

A **directory entry** can be a file or subdirectory. It is described in terms of file names, extensions, length of the file according to bytes, and date and time the file was created.

The **root directory** is the main directory that DOS creates during the formatting process and is represented by the backslash (\).

A **subdirectory** is a file that contains directory entries within a directory.

Current drive is the one DOS assumes unless specified otherwise by another command.

Current directory is the directory DOS assumes unless you specify differently.

A **path** is the sequence of subdirectory names leading to a file or a directory.

A **path name** defines the path to the subdirectory and is preceded by a backslash (\).

A **tree-structured system** resembles the structure of a tree with its root (main directory) and all the branches (subdirectories).

The directory commands are:

MD	Make a Directory
RD	Remove a Directory
CD	Change a Directory
TREE	Displays an entire directory file structure system on the diskette or hard disk drive system

Applications

Complete Chapter 7 Exercises in Appendix C.

Appendixes

A: A Quick Reference for DOS Commands

B: Common DOS Error Messages

C: DOS Application Exercises

A

A Quick Reference for DOS Commands

Internal and External DOS Commands

The DOS command is shown in uppercase letters. Internal and external commands are represented by an I or an E in parentheses.

Command	Description
CD (I) (CHDIR–Earlier DOS Version)	Displays the default subdirectory. Entering CD with a drive specification and a path name will change the default directory. Refer to Chapter 7.
CHKDSK (E)	Checks disk and displays status report. Entering CHKDSK with drive specification will check disk in that specified drive. CHKDSK shown with file name will check that specific file in the default drive. Refer to Chapter 6.
CLS (I)	Clears the screen. Refer to Chapter 6.
COPY (I)	Copies files. Refer to Chapter 5.

DATE (I)	Displays the correct system date and allows option to change. Refer to Chapter 6.
DEL (I) (ERASE)	Deletes a file from a disk. Use caution when using this DOS command. DEL *.* erases all files in the drive designated. Refer to Chapter 5.
DIR (I)	Displays the list of files on a specified drive. DIR/W displays a list of all the files on the specified drive in a wide format. DIR/P displays a screenful and pauses for viewing. Refer to Chapters 4 and 5.
DISKCOMP (E)	Compares two diskettes to see if they have identical tracks and sectors. Refer to Chapter 6.
DISKCOPY (E)	Makes an identical copy of an entire disk. Refer to Chapter 5.
ERASE (I)	Erases a file. Same as DEL. Refer to the "Delete (DEL) Command" section in Chapter 5.
FORMAT (E)	Prepares a disk so that files can be stored on it. During formatting process, DOS checks for defective tracks and places a directory and file allocation table (FAT) on each disk. *Warning: Format will destroy all data on an existing disk.* Use this command with caution. FORMAT (DRIVE):/S formats disk in specified drive and places operating system files and COMMAND.COM (depending on version of DOS) on disk to make it bootable. FORMAT (DRIVE):/V formats disk in specified drive and

	allows option to enter a volume label on the disk. FORMAT (DRIVE):/S/V formats disk in specified drive, places system files and COMMAND.COM (depending on version of DOS) on disk to make it bootable, and allows option to enter a volume label on the disk. Refer to Chapter 5.
LABEL (E)	Displays the current volume label on specified disk. Can change label entering LABEL. Only available in DOS Version 3.0 and above. Refer to Chapter 6.
MD (I) (MKDIR–Earlier DOS version)	Makes or creates a subdirectory on specified drive. MD \subdirectory name creates subdirectory one level below the root directory. Refer to Chapter 7.
RD (I) (RMDIR–Earlier DOS version)	Removes a directory. Subdirectory must be empty of files before a subdirectory can be removed. Refer to Chapter 7.
REN (I)	Renames a file. Refer to Chapter 5.
TIME (I)	Displays the current system time and allows option to change. Refer to Chapter 6.
TYPE (I)	Displays the contents of a file on the screen. Refer to Chapter 5.
VER (I)	Displays the DOS version currently being used. Refer to Chapter 6.
VOL (I)	Displays the volume label of a disk. Refer to Chapter 6.

Refer to the DOS reference manual for information on the following DOS commands not introduced in this short version of the text.

Command	Description
EDLIN (E)	Creates and edits text files.
MODE LPT# (E)	Changes printer settings for certain printers.
PATH (I)	Searches the path to different subdirectories.
SYS (SYSTEM) (E)	Transfers the operating system files and boot files on specified disk.

Function (F) Keys for DOS Commands

The following function (F) keys will help you correct DOS command errors quickly:

Key	Function
F1	Each time it is pressed, it copies one character of the previously entered line. The right cursor key works the same way.
F2	Copies all characters in the previously entered line up to a specified character when it is pressed and then the character is pressed.
F3	Replaces the entire previous command without re-entering it.

Function keys F4, F5, F6 are also used for re-entry and editing of DOS commands. The DOS reference manual contains a description of these keys.

B

Common DOS Error Messages

This appendix includes errors that occur while reading or writing to devices (such as disk drives or printers) on your system and other general DOS messages.

Informational and error messages have been included in the chapters discussing the DOS commands; however, refer to the DOS reference manual for a complete list of device errors and other messages.

Device Errors (Reading or Writing to Devices on your System)

When any of the *device error messages* appear, the system waits for you to respond. If you know what has caused the error, correct the problem, then *respond in the following order*:

Retry (R)	Retry this command again because the error may not occur again.
Abort (A)	This response ends the request for the disk to read or write.
Ignore (I)	This response ignores the error and continues the operation. Caution: When choosing this response, data may be lost.

Following are several of the device error messages:

Error	Description
Drive not ready error	This message will appear because the drive latch (door) is not closed or the diskette is not properly formatted. Correct the problem if necessary. Response: R (Retry).
General failure	Some common causes of this error are diskette type and drive are not compatible; the diskette is not completely inserted into the drive and/or the drive latch (door) is open; or the diskette is not properly formatted. Check the diskette and drive; correct if necessary. Response: R (Retry). If message appears again or problem continues, A (Abort). You may need to obtain professional assistance.
Not ready	Disk drive door(s) may not be closed or printer may not be turned on. Check the drives and printer. Correct the problem if necessary. Response: R (Retry).

DOS Command Messages

The following messages are related to the DOS commands (not devices).

CHKDSK or CHKDSK /F

Allocation error for file, size adjusted	This message has determined that invalid cluster number was found in the file allocation table (FAT). If you did not enter CHKDSK/F, Enter CHKDSK/F to correct the file size.
Contains xxx non contiguous blocks	This informational message indicates that the file is written in xxx pieces on different areas of the disk. COPY the fragmented files to another disk so the file will be stored sequentially on the disk.

xxx lost clusters found in yyy chains

Convert lost chains to files (Y/N)?

This message appears because Ctrl-Break was used during a disk input/output operation.

If you reply Y for yes and you have used CHKDSK/F, each chain will be recovered into a separate file. If you reply N for no, the command CHKDSK frees the space.

Refer to Chapter 6 for CHKDSK command.

DOS

Bad command or file name

The command you just entered is not a valid command.

Verify the spelling of the command and re-enter the command. If the spelling is correct, determine if the default drive contains the external command you are trying to use.

Disk boot failure

An error occurred when you tried to load DOS into memory.

Boot the system again. If the error is not corrected, insert a back-up DOS diskette into drive A and boot the system again.

File not found

A file named in the directory does not exist in the specified directory.

Re-enter the correct file name.

Non-System disk or disk error

Replace and strike any key when ready

A disk read error occurred when you booted the system.

Insert a DOS diskette into drive A; then, reboot the system.

Refer to Chapter 3 for information on booting.

COPY

File cannot be copied onto itself

You tried to COPY a file with the same name onto the same disk.

Change the name given to the copy, put it in a different directory, or copy it onto another disk.

FORMAT

Disk not compatible	This message appears when you try to format a diskette in a drive that is not supported by the IBM devices that the command FORMAT requires. Use a compatible disk drive.
Format failure	A disk error was detected while formatting the target diskette. Use another diskette and enter the command again.
WARNING! All data on non-removable disk drive x will be lost Proceed with Format (Y/N)?	This message is critical because it tells you that the hard (fixed) disk will be formatted. Should you get this message while trying to format a diskette (and not the hard disk), be aware of the consequences if you end up formatting the hard disk and not the diskette you wanted.

CAUTION: Be certain that you want to format the hard disk before you respond to this message. Type N if you do not want to format the hard disk. Type Y if you do want to format the hard disk. If you type Y and are using a hard disk, all data will be erased.

Refer to Chapter 1 for diskette compatibility and Chapter 5 for Format command.

C

DOS Application Exercises

Chapter 4 Exercises

To use a two-floppy disk drive system, insert the DOS diskette into drive A and the Data diskette into drive B. Hard disk users should insert the Data diskette into drive A after the computer has been booted.

1. Boot the computer if you have not already done so. The system prompt should be displayed.
2. Practice changing drives.
   a. For a two-floppy disk drive system, change from drive A to drive B.
   b. For a hard disk drive system, change from drive C to drive A.
3. Display the directory.
4. At the system prompt, display the directory again. Stop the directory from scrolling on the screen. Continue scrolling the directory.
5. Request the directory again; however, this time cancel the command as the directory is scrolling. The system prompt should be displayed.
6. To end the computer session, remove the diskette(s) **before** turning off the computer.

Chapter 5 Exercises

To use a two-floppy disk drive system, insert the DOS diskette into drive A and the Data diskette into drive B. Hard disk users should insert the Data diskette into drive A after the computer has been booted.

1. Boot the computer if you have not already done so. For a two-floppy disk drive system, the system prompt should be A>. For a hard disk drive system, A> should be displayed.
2. If you are using a two-drive system, change the logged drive to drive B.
3. Find all the LIB files on the Data diskette by using the wildcard (?) option.
4. Find all the files on the Data diskette that begin with the letter S.
5. Find all the files on the Data diskette that have an extension of .REF.
6. View the directory of the Data diskette as a wide display.
7. Display the directory of the Data diskette, pausing after the first screen page. Then continue displaying the directory.
8. Find and display the file entry EDITING on the Data diskette.
9. Find and display the file entry LONGHORN on the Data diskette.

WARNING: Be extremely careful when using the Format command. Never use these commands:

```
C>format

C>format c:
```

or any Format command that will delete data already saved on a diskette or hard disk unless you do not want to save the data.

10. Remove the Data diskette; insert a blank diskette. Be certain that the blank diskette is in the correct drive (for a two-floppy disk drive system, drive B; for a hard disk drive system, drive A). Format the blank diskette. Remove the formatted diskette and replace it with your Data diskette.
11. Make a copy of the file TABS. Name the new copy TABS1.
12. Verify that the file TABS1 was copied by displaying the directory with the file name.
13. Try to view on the screen the contents of the file TABS1.
14. Make a copy of the Data diskette.
15. Delete the file TABS1 on the original Data diskette. Check the directory to verify that the file was deleted.
16. Rename the file RETURNS to RETURNS1 on the original Data diskette. Check the directory to see the renamed file.
17. Rename the file RETURNS1 to RETURNS. Verify that the file name was changed again to RETURNS.

Chapter 6 Exercises

To use a two-floppy disk drive system, insert the DOS diskette into drive A and the Data diskette into drive B. Hard disk users should insert the Data diskette into drive A after the computer has been booted.

1. Boot the computer if you have not already done so. The system prompt should be displayed.
2. Display the directory of the Data diskette in a wide format. Clear the screen.
3. Check the status of the Data diskette. Print the screen. Clear the screen.
4. Request the volume label on the Data diskette. Clear the screen.
5. Display the volume label of the DOS diskette (for a two-floppy disk drive system, drive A; for a hard disk drive system, drive C). (For DOS version 3.0).
6. Change the volume label to your Social Security Number. Verify the new volume label. Print the screen. Clear the screen. (For DOS version 3.0).
7. Display the system date. Accept or change the date and clear the screen.
8. Display the system time. Accept or change the time and clear the screen.

Chapter 7 Exercises

To use a two-floppy disk drive system, insert the DOS diskette into drive A.

1. Boot the system if you have not already done so. The system prompt should be displayed.

WARNING: Be extremely careful when using the Format command. Never use these commands:

```
C>format

C>format c:
```

or any Format command that will delete data already saved on a diskette or hard disk unless you do not want to save the data.

2. Reformat your diskette that you copied in Chapter 5. Do not format the diskette labeled DATA or the DOS diskette (used in two-floppy disk drive systems).
3. From the root directory, make the following subdirectories:

   WP (for word processing), DB (for database), and SS (for spreadsheets).

4. Display these subdirectories on the screen. Print the screen.
5. From the subdirectory WP, make a subdirectory called WPERF (for WordPerfect). Be certain you are in the subdirectory WP and not in the root directory.
6. From the subdirectory WP, make a subdirectory called WS (for WordStar). Be certain that you are in the subdirectory named WP and not in the root directory.
7. Display the subdirectories in WP on the screen to verify that the subdirectories WORDPERF and WS have been created.
8. Remove the subdirectory named WS from the subdirectory WP.
9. List the directory structure.

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